

OS/2

M A G A Z I N E

Test Drives

4OS2's command line

Chron's scheduler

Recognita Plus's OCR

Multimedia Primer

Audio, video, and
CD-ROM, Oh my!

At Your Command

Understanding the
OS/2 Command Line

Configuration Made Simple

Fine-tuning DOS and
Win-OS/2 Settings

Picking a Programming Language

When to use C++, Smalltalk,
REXX, and BASIC

Just Add Power

Who sells PC systems
preloaded with OS/2?

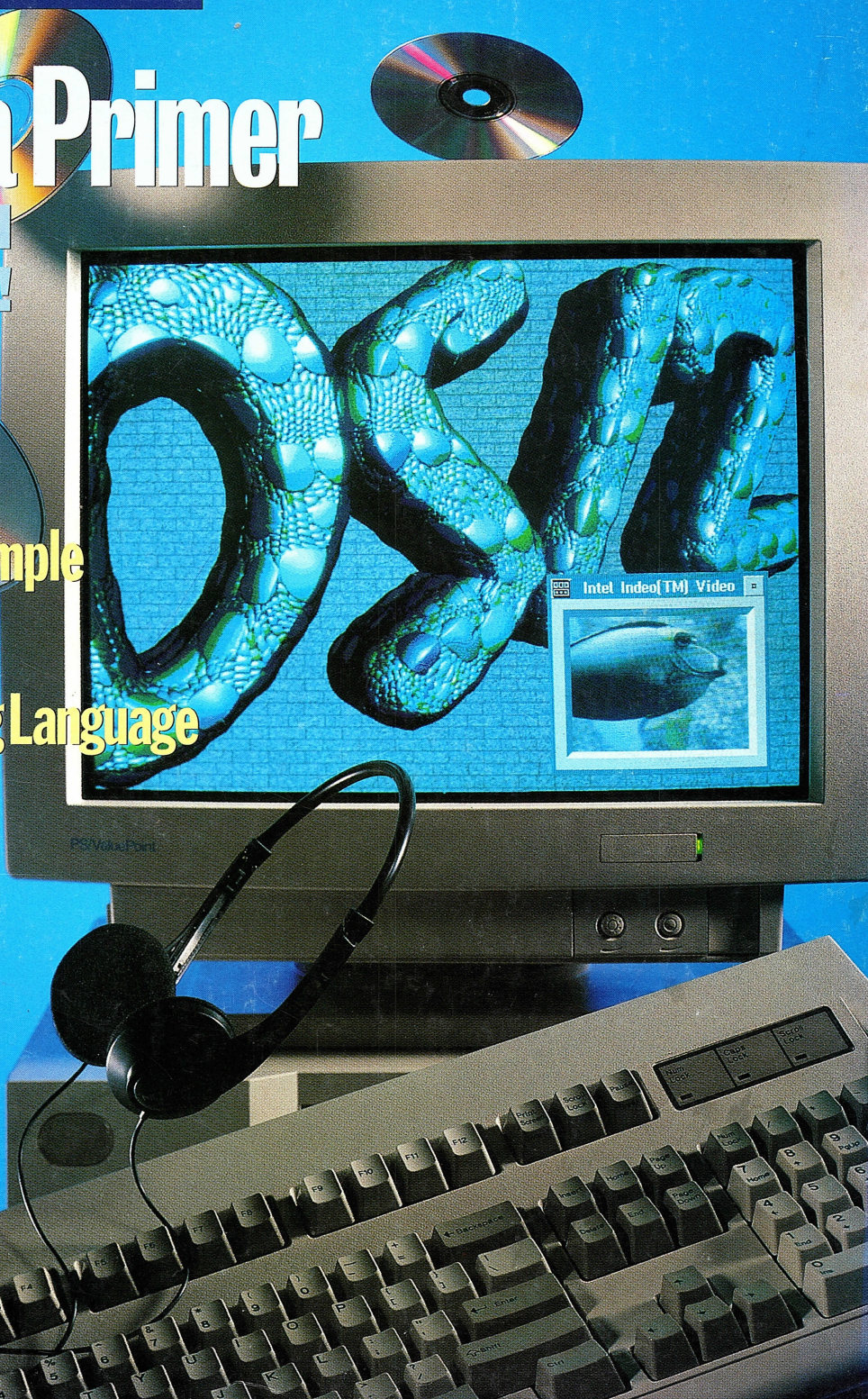
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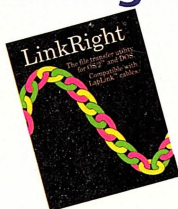
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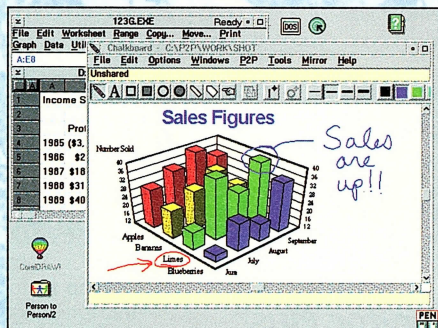
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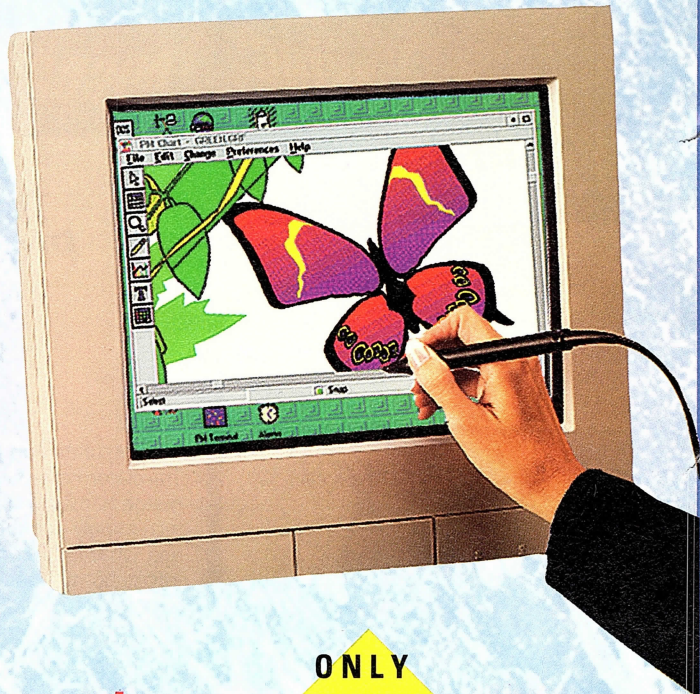
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SAN FRANCISCO, CA, AND ADDITIONAL
MAILING OFFICES. OS/2 MAGAZINE (ISSN
#1073-1547) IS PUBLISHED MONTHLY BY
MILLER FREEMAN INC., 600 HARRISON
ST., SAN FRANCISCO, CA 94107.
DOMESTIC SUBSCRIPTION RATE FOR ONE
YEAR IS \$39.95; TWO YEARS, \$64.95.
CANADA RATES FOR ONE YEAR ARE \$49.95;
TWO YEARS, \$74.95 (PAYABLE IN U.S.
FUNDS). FOR ALL OTHER COUNTRIES, THE
RATE FOR ONE YEAR IS \$79.95 AIRMAIL
(PREPAYMENT IN U.S. FUNDS). SINGLE-
COPY PRICE (U.S.) IS \$3.95 PLUS \$2.00
POSTAGE; INTERNATIONAL, \$8.75 INCLUD-
ING POSTAGE. ALL MATERIAL COPY-
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DEPARTMENT, 600 HARRISON ST., SAN
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ABC MEMBERSHIP APPLIED FOR
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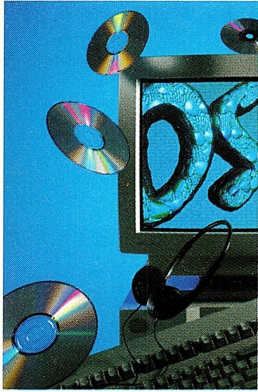
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You need a directory listing or want to format a floppy — so you double-click the "DOS Window" icon. Or, should you throw caution to the wind and pop open an OS/2 command window? Let's explore how the OS/2 command line differs from the familiar DOS prompt, from batch files to keyboard support, from macros to printing. *By Eric Pinnell*

39 To Preload, or Not to Preload

That's the question: why, out of 21 PC vendors who responded to our survey, do only eight offer to preload OS/2 upon customer request — and why do even fewer mention OS/2 availability in their marketing literature and advertising? Find out who supports OS/2, and how they define such support. *By Esther Schindler*

41 Configuration Made Simple

Inside a program's settings notebook are a plethora of options for fine-tuning DOS and Win-OS/2 applications. Although they're documented on-screen and in the OS/2 manuals, it's not always obvious which settings are best for which situations. Looking for hardware speed? Clean telecommunications? Smooth multitasking? Find it here. *By Lenny Bailes*

48 The Right Tool for the Right Job

OS/2 2.x is a great operating system for programmers, whether for personal or in-house use, or for shrink-wrapped sale. But what's the best language to use, and why? Let's examine the general benefits of languages like REXX, C++, Smalltalk, and BASIC, as well as the world of proprietary "fourth-generation" database languages. *By Larry O'Brien*

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If you use this low-price accounting package, your accountant will love you. But is it the right tool for your business? *By Esther Schindler*

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75 Tips & Tricks

Do you have multiple desktops? Or fonts that are too small? Thanks to David Reich, we'll learn how to solve those problems, and more.

80 End Notes

In his new book-review column, avid reader Stan Kelly-Bootle reviews the forthcoming "Books for the Baffled" series, as well as Using OS/2 2.1 Special Edition.

Perspectives

Go, Team, Go!

If you're walking around a major trade show, checking out OS/2 hardware or software in a computer store on a Saturday, or asking a question on an electronic bulletin-board, there's a good chance you're going to run into a member of Team OS/2. If so, you're lucky.

Team OS/2 is an informal organization of individuals trying to encourage PC owners to upgrade to OS/2, support OS/2 users having difficulty with their systems, and lobby hardware and software makers to add to or improve their OS/2 offerings. It's a daunting task. You might call it a labor of love: Every Team OS/2 member is an enthusiast about OS/2, and is willing to work hard to promote the operating system and OS/2-based applications software. We can't underestimate the positive effect they've had on OS/2's success.

Team OS/2 was founded back in 1992, when a Team OS/2 forum was opened internally at IBM. But it's not a pure IBM group: Today, there are more than 2,500 Team OS/2 members, and only about one-fifth—just over 500—are IBM employees, some working for Personal Software Products, the IBM division that makes OS/2. But most Team OS/2 members are independent consultants, satisfied end-users, or IBM corporate customers who tried OS/2, liked it, and decided to evangelize it. Team OS/2 is growing at a rate of more than 200 members each month and, at last report, there were Team OS/2 members in 41 countries.

What do Team OS/2 members do? At Fall Comdex '93 in Las Vegas, they helped exhibitors get OS/2 "up and running" in their booths by providing free technical assistance before and during the trade show. In large part, we should credit Team OS/2 for making Fall Comdex the "OS/2 Comdex" in the eyes of many attendees and analysts. On March 5th, they "blitzed" the CompUSA computer chain, with demos and Q&A sessions at 60 out of 71 stores. According to CompUSA officials, this Team OS/2 action increased their OS/2 prod-

uct sales by a factor of 10.

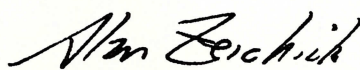
Team OS/2 volunteers, of course, keep on doing what they do best. They performed the same vital role at Spring Comdex '94 in Atlanta, and are scheduled to play a major supporting role at the OS/2 World Conference and Exhibition, to be held this July in Santa Clara, Calif.

Then, we have the user-group connection. By providing help with OS/2 demos and maintaining a registration of OS/2 user groups, Team OS/2's headquarters support OS/2 grassroots efforts worldwide.

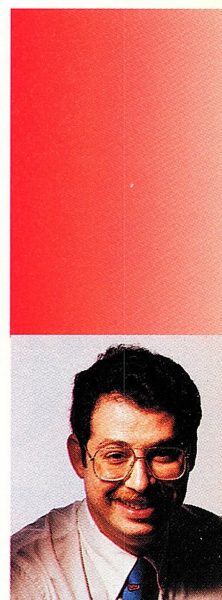
One of the nicest benefits of Team OS/2 is its regular electronic newsletter. Distributed on-line in .inf format, it contains reports of Team OS/2 events, information on how to join and contribute to the organization, and even advice on how to do an impressive OS/2 demo. You'll even find a latest directory of OS/2 user groups in each issue. Best of all, you don't have to be a Team OS/2 member to download and enjoy the newsletter—so why not check it out?

The newsletter's file name is *tnew##.zip*, where ## is the issue number. The latest version, at the time of writing, is *tnew06.zip*. You'll find it on CompuServe (OS2USER section 9), America Online (keyword OS2), Delphi (custom forum 41), GENie (OS/2 Roundtable), Prodigy (OS/2 Club), FidoNet (Fernwood file collection, General Information area), via anonymous ftp from *software.watson.ibm.com* in the */pub/os2/teamos2* directory, and via gopher from *index.almaden.ibm.com*.

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Alan Zeichick,
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Where are the power users?

Dear Editor:

Where are all the power users? I am running OS/2 for Windows, IBM TCP/IP, IBM NFS, IBM PMX X-Windows, and the Netware Requester on a Compaq Deskpro 4/66i, a Compaq 1,024 monitor with a QVision 1MB video adapter in SVGA mode, 16MB, a 540MB drive, and a Media Vision Multimedia Kit. Right now, I am running FaxWorks, Lotus Notes for OS/2, cc:Mail, Xtree for Windows, two Telnet-3270 mainframe sessions, Tivoli Works for UNIX under X-Windows, and listening to a John Mellencamp CD. I have my neighbor's drive and two UNIX file systems mounted locally using NFS. My neighbor (also running OS/2 with NFS) has a directory on my machine mounted on his machine. We can telnet to each others' machines and execute commands. As soon as I install NFS on our mainframe, we can all mount the mainframe as a local drive. My machine does it all and never crashes—it isn't even breaking a sweat. Let's hear it from all you power users out there. Stand up and be counted. Our machines run circles around just about anything else out there!

Keith Linkous
via the Internet

Wide Data Paths?

Dear Editor:

I have an in-depth question regarding Brian Proffit's article "Moving to a 32-Bit World" in the April 1994 issue (pp. 38-41).

While discussing 32 bits with some fellow software engineers, I noted some surprise or skepticism at the notion that 16 to 32-bit migration might slow down an application. Their objection was simple: they argued that, although a 32-bit add involves twice as many bits as a 16-bit add, if the data bus is also 32 bits wide, then the add should be no different in speed. How do I answer them?

To provide more context, we were initially discussing porting our applications to the 64-bit DEC Alpha chip, when I piped up (and wet-blanketed!) with the newly-acquired knowledge I gleaned from your article.

Rich Lavalley
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What you say would seem to be true in theory, but it doesn't actually work that way. For example, check the Intel processor specifications. They specifically show the 32-bit instructions themselves taking more clock cycles—completely independent of the time taken to load the data into 32-bit registers. There have been numerous benchmarks that show the difference. Mind you, 32-bit applications can be faster, if it is the type of application that requires the large size and thus avoids a lot of doubled 16-bit functions.

The Alpha chip is entirely different. Most of my comments regarding 16 vs. 32 are due to some of the strange elements present in Intel architecture. RISC chips, such as the Alpha, do not suffer the same problems. Unless you need 64-bit values, your application will grow larger than needed, because

you will still be carrying a lot of unneeded zeros. But it may well be blazingly fast.

-Brian Proffit

32-bit World

Dear Editor:

In "Moving to a 32-bit World" (April 1994, pp. 38-41), Brian Proffit describes, in one section, how instructions involving a single bit waste 31 bits of space (and time), because they have to be carried along through its instruction cycle. Don't all the 80x86 chips have increment and decrement instructions to avoid this problem?

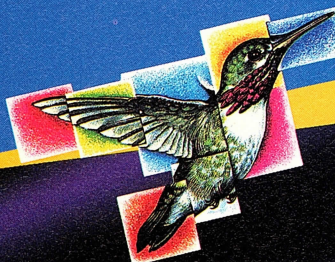
Also, have you seen timing specifications for Intel chips? In general, I'm not sure that adding more bits causes an operation to take longer. The hardware that actually does the addition (the ALU) does it in one operation up to the number of bits the ALU uses. Thus, a 32-bit ALU will take the same time to add two 32-bit numbers as two 16-bit numbers.

Trevor Tompkins
via the Internet

The complete execution of a single instruction may take many clock cycles—not just one. Many factors are involved, such as how much data needs to be loaded during the fetch cycle, and so on. The instruction cycle actually has several parts and it isn't a straightforward one instruction equals one clock. I'm afraid it is quite true that 32-bit instructions execute more slowly—one aspect that makes writing good optimizers for Intel-based compilers so complex.

-Brian Proffit

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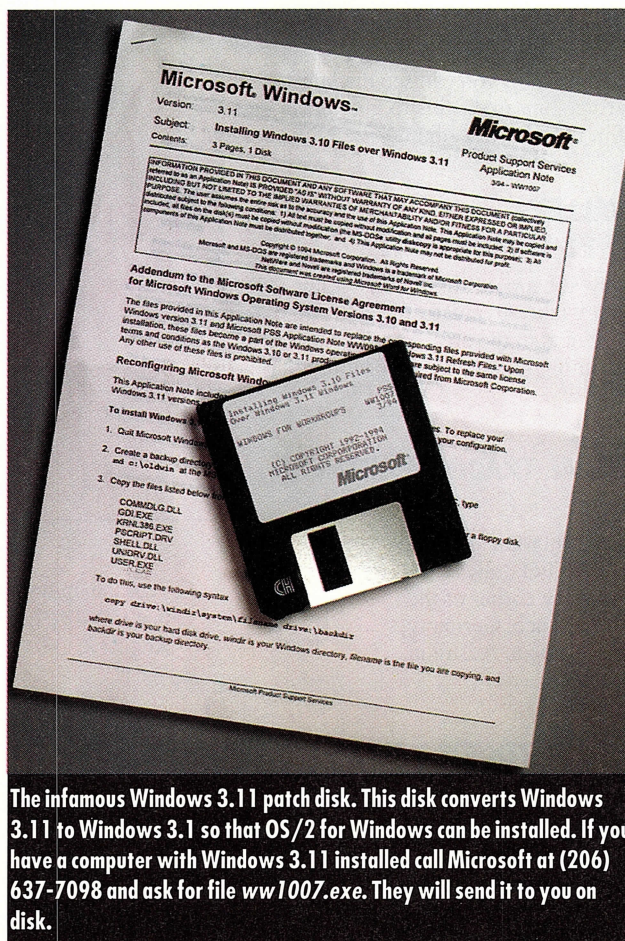
OS/2 v. Windows 3.11

ROUND 2, THE DISK THAT DIDN'T EXIST BY ALEXANDER ANTONIADES



Recent developments in the ongoing battle between OS/2 for Windows and Windows 3.11 are both good and bad for OS/2. The good news is that IBM has finally released version 2.11 code of OS/2 for Windows. The bad news is it doesn't work with Windows 3.11 or Windows for Workgroups 3.11. More good news is that while the OS/2 for Windows Service Pak was being delayed, IBM fixed 13 more bugs than were fixed in the general Service Pak. But the worst news yet is that Microsoft has stopped shipping Windows 3.1, which means that all new machines will require modifications of the Windows code to install OS/2 for Windows.

The news on the Windows 3.11 patch disk is so dubious that it can only qualify as bad news for everyone. The patch disk is used to "downgrade" Windows 3.11 to Windows 3.1 so that OS/2 for Windows, which only works with Windows 3.1, can be installed. After we reported this fact in our June issue ("Dateline OS/2," pp. 11), we started receiving calls from



The infamous Windows 3.11 patch disk. This disk converts Windows 3.11 to Windows 3.1 so that OS/2 for Windows can be installed. If you have a computer with Windows 3.11 installed call Microsoft at (206) 637-7098 and ask for file ww1007.exe. They will send it to you on disk.

irate readers who had been told by Microsoft and IBM tech support that no such patch disk existed. Phone calls to IBM and Microsoft's PR agencies confirmed this. So, instead of verifying this with our numerous sources, we went straight

to Microsoft's Windows Support line at (206) 637-7098.

Microsoft, this time, stated that a patch did exist and the file name was ww1007.exe. We searched through the Microsoft Software Library on CompuServe, but found no file by that name. We were told by Microsoft that "in order to avoid confusion," the patch file is unavailable from any of their on-line libraries and that it is only obtainable by asking Microsoft to send a disk.

If petty disputes like this result in nothing but a lot of finger pointing between IBM and Microsoft executives, then what's in store for the future? It looks like diplomacy on the lowest level is the only hope for the consumer caught in the middle of the OS wars.

OS/2 for Windows Service Pak Released

Do you have problems with OS/2 for Windows? Consider installing the OS/2 for Windows Service Pak, a series of bug fixes available in one large patch that you install over OS/2 for Windows. This

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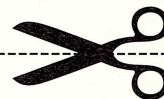
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patch will not alleviate the compatibility problems with Windows 3.11 or Windows for Workgroups 3.11 and will not add any new functionality to OS/2. Instead, it is supposed to address bugs in the original release and improve reliability of particular areas, such as network support and enhanced Windows emulation. IBM has suggested that users who aren't currently experiencing problems with OS/2 will not need this update.

The OS/2 2.1 for Windows ServicePak (IBM part number XR06300) can be obtained electronically or directly from IBM by calling (800) 494-3044. The OS/2 for Windows Service Pak is \$25 for the CD-ROM or \$40 for disks. The Service Pak disk images are available electronically from the following sources: the IBM OS2BBS in the software download library, on CompuServe in the IBM OS2 Forum Library

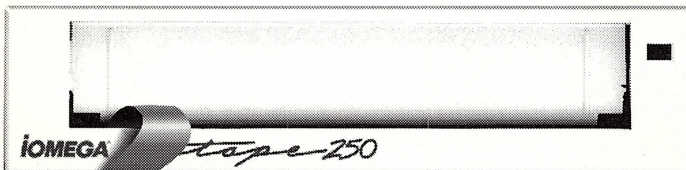
(GO IBMSERV), on the Internet at the anonymous FTP site *software.watson.ibm.com* in the */pub/os2* directory, or on the IBM PC Company BBS at (919) 517-0001. The disk images require IBM's *loadskf.exe* utility to be uncompressed.

The PSP Technical Interchange in San Francisco

More than 2,300 people attended the IBM Personal Software Products' Technical Interchange on April 25-29, 1994. At the start of the show, IBM announced the sale of the five millionth copy of OS/2 2.x, so the mood was understandably upbeat. Lee Reiswig, the president of IBM Personal Software Products, made reference, in his keynote address, to OS/2 for the Power PC (replacing the earlier name, Workplace OS). The Power PC machines on display at the show only ran slideshows of

OS/2 screen shots. Also conspicuous, in its absence, was the peer-to-peer version of OS/2, although OS/2 SMP was available for hands-on demonstrations.

Now that there are five million copies of OS/2, will native OS/2 software sales take off? The consensus among OS/2 vendors seems to be that offering a complete suite of applications is the best way to get OS/2 users to choose native OS/2 software over Windows software. WordPerfect had cited their lack of an application suite as one of the main reasons for leaving the native OS/2 application market. Footprint Software announced that they were working on a set of applications called the Footprint Power Applets and DeScribe announced their plans for a suite of applications called Magnum. Will this approach work? We'll have to wait and see.



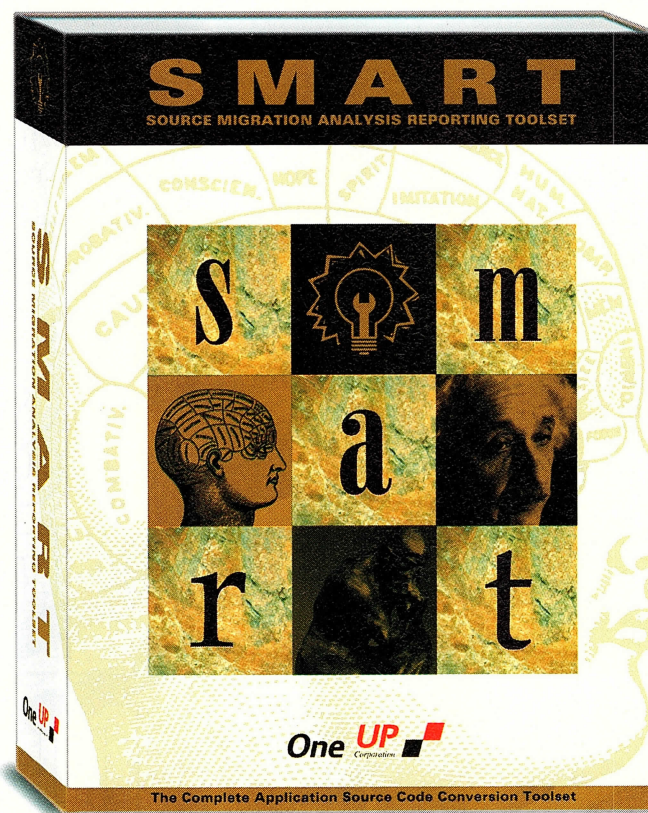
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Selecting the Right Stuff

WHAT CRITERIA YOU SHOULD USE TO CHOOSE YOUR HARDWARE BY AMY D. WOHL



We live in a world that is based on the idea that in a year or two everything you bought this week will be hopelessly out of date. Interestingly, it will all work out perfectly well. However, this fact does lead to great frustration. The accounting department never understands why it should replace working equipment just because there's new stuff available. And upper management groans every time we ask them to fund, once again, yet another wave of new technology.

But if we phrased our arguments differently, we might not have this problem. We focus too sharply on the hardware (probably because of its obvious physicality) and too little on the software, where our arguments might make much more sense.

In 1981, on the day of the original IBM-PC announcement, I (like thousands of other hardy pioneers) ordered an IBM-PC. Daringly, I requested one with 192K of memory, three times the amount on the CPM machine then ensconced on my desk, and more than enough to scandalize my mainframe-oriented husband. Within a year, I could no longer run the new software arriving in the marketplace.

DOS software held the line at the 640K barrier for a long time in spite of the severe performance penalties built into the patches (which clever developers band-aided around the architecture of that seemingly infi-

**In a year or
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nite, never-to-be-reached limit). Entire companies, such as Quarterdeck, were built around trying to squeeze a little extra memory, power, and performance out of the DOS environment.

OS/2 was a strategy designed to help get us past the architectural limits of DOS and bring us into a new, vastly better environment where we could build more sophisticated applications, better interfaces, and achieve much better performance. In the fast-moving history of personal computing, we quickly forget how well OS/2 ultimately delivered toward the original goals!

1994 will be a year of decision-making for numerous users. Many of us need new hardware. If you don't have a 486 yet, you're clearly living in the dark ages (even though, I'd point out, my old PS/2 386 machine still does a perfectly adequate job running print queues and performing other chores, hiding in a corner where our sleek 486 laptops don't have to look too

often). Even if you have been using a 486 for some time, you're probably looking around at Pentiums and RISC machines.

Your accounting department will be doing what accounting departments usually do, counting their beans and pointing out that what you've got still works. May I offer some advice?

Talk about the software and the business problems you'll be using it to solve. If you're going to upgrade your network to RISC servers and 486 workstations, implementing new applications and resolving the bottleneck in order entry or customer service (changing the company's cash flow, in a positive way, as you go), the accounting department will most likely show more interest in when it's going to happen than they would in the trivial issue of a one-time expenditure to smooth the way.

Really good news is in store for OS/2 users in the tumult of decision-making activities. All of the new machines expect to run OS/2, whether they're Intel or Power PC- (the most important new RISC architecture) based. And the decision to implement Taligent as a component architecture means that OS/2 can be enhanced in place, in an evolutionary way, instead of having to make an abrupt changeover.

Of course, many other operating systems are available and they are having a very interesting effect on

The Big Picture

the marketplace. In the short run, they are causing an increase in OS/2 sales, as customers decide OS/2 is the most mature server operating system for commercial applications. In the long run, another interesting benefit will appear. OS/2 was long faulted as requiring too much computer—far too much memory. But now that it's being joined in the marketplace by other competing

server operating systems, its memory requirements seem to be equivalent, or even less demanding.

Of course, some users will prefer and use other operating system environments. The computer market has always supported much diversity. The good thing about the new systems coming into the market is that they offer much to OS/2 customers, they offer it in a non-

discriminatory fashion, and it is now clear that OS/2 requires no more of an investment in hardware than any equivalent system.

On the software front, OS/2 has never been able to attract as much software to its own native platform as might have been desirable, but the tools available to OS/2 users that enable the full use of Windows applications are now very enticing. IBM offers an easy-to-add OS/2 on Windows desktop which offers full protection for each application and supports all Windows 3.0 and 3.1 compliant applications.

A few tips for buyers:

Don't buy any more desktop systems without CD-ROM drives. Even if you don't care about Multimedia (and you should), you're going to need them to manage software installation and graphics storage.

Think seriously about your next network plan, remembering to keep in mind how you'll manage your laptop and remote workers and how much bandwidth (remember multimedia and voice) you'll be handling in this generation of the installation. We're all starting to tread on thin ice here.

Seriously consider whether a high-end laptop with a docking station might be a better buy than a desktop and a cheaper laptop for a frequently roaming worker. The screens have become so good (especially the large active matrix color ones) that ancillary monitors are scarcely necessary any more.

And watch out for my shopping cart when you're cruising the aisles at your favorite superstore. I travel fast!

Amy D. Wohl is president of Wohl Associates, a consulting firm specializing in office information systems, personal computing, and end-user computing. She is also editor of the Trendsletter, a monthly newsletter on computer industry trends.

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NEW COMMAND LINE, TASK SCHEDULING, AND OCR BY BRIAN PROFFIT



4OS2 VERSION 2.0

Everything is going graphical. The Workplace Shell allows users to manipulate their systems with little or no knowledge of the underlying structure, which is a great way to extend computing to a whole new audience. But people who have been more comfortable using command lines for a number of basic system activities may find that 4OS2 is just what they need.

A collection of finishing touches

4OS2 completely replaces OS/2's *cmd.exe* command processor. It doesn't overwrite it, of course, and complete uninstall instructions are included; instead, it inserts itself as the command shell in your *config.sys* and renders all of your command prompt sessions more intelligent. It doesn't come as one big change, but more as a collection of additions and improvements to what you've come to expect. For example, have you ever forgotten a command? You know that one exists that does just what you need it to, but you can't remember what it is. Just type ? at a command prompt and 4OS2 responds with a complete command list.

Directory lists are more readable under 4OS2; directory names appear in upper case and file names in

4OS2
completely replaces
OS/2's *cmd.exe*
command processor.

lower case to make them easier to distinguish. A /2 parameter exists that prints the directory in two columns, showing twice as many

disk space actually allocated. This number includes extended attributes and empty space required to fill disk sectors. The number reflects the real amount of disk space the files occupy—and the difference can be quite enlightening. (You'll find that HPFS volumes waste less disk space than FAT volumes.) In addition, it gives you the ability to color code file names based on their extensions making the simple *dir* command a much more powerful tool.

You'll also receive more meaningful messages as a result of your commands. When you rename a file, 4OS2 tells you the before and after names, so you can be sure it worked as you expected. This kind of thoughtful additional information is spread throughout the product. For example, when you delete files, you're told exactly how much disk space you have just made available.

Your command history is more accessible with 4OS2. OS/2's command processor allows you to go back through previously entered commands by pressing the up arrow at a command prompt. However, if you want to go back several commands through a long history list, it can take an annoying amount of time to scroll back to the desired command. By typing the first few letters of a command and pressing the up arrow, 4OS2 will display the

```

OS/2 Window
OS/2 Ctrl+Esc = Window List Type HELP = help
Directory of c:\amos2\*.
<DIR> 10-17-93 12:50 <DIR> 10-17-93 12:50
<DIR> 10-17-93 12:50 <DIR> 10-17-93 12:51
<DIR> 10-17-93 12:51 <DIR> 10-17-93 12:51
<DIR> 10-17-93 12:51 <DIR> 10-17-93 12:51
<DIR> 10-17-93 12:51 00000000.001 44 9-21-93 16:02
adshd.sgs 19258 2-07-94 15:51 arpa.exe 34320 2-07-94 17:22
adshd.msg 691 1-25-94 21:42 audiod.sgs 6672 4-26-93 0:20
cdpn.exe 95760 2-08-94 19:06 ctc.exe 45593 2-08-94 19:07
cctres.inf 34412 1-25-94 21:49 auditpe.ini 23963 2-28-94 12:02
ainstall.exe 215568 2-07-94 17:05 eme.msg 728 1-25-94 21:12
anp2.ini 2949 3-04-94 10:12 anp2cd.ini 9184 2-28-94 12:01
anp2cd.ini 9183 2-28-94 12:02 anp2cd.mcd 4547 2-03-94 20:30
api.exe 71696 2-07-94 12:05 anp2cd.sgs 47336 2-07-94 16:36
play.cnd 6657 3-19-93 20:24 readme 24907 1-31-94 12:29
record.cnd 4261 4-26-93 23:23 anp2cd.sgs 4540 2-07-94 16:13
api.ini 8974 2-28-94 12:01 anp2cd.sgs 31252 2-07-94 15:52
stpn.exe 70160 2-07-94 17:22 audio.sgs 3584 12-03-92 10:20
ocpn.exe 175120 2-07-94 17:11
951,861 bytes in 35 file(s) / 985,088 bytes allocated
[c:\amos2]
  
```

4OS2 offers a colorful *dir* command.

files without removing any of the detail. Directory lists are automatically sorted alphabetically, which makes it easier to spot the specific file you want. The information at the bottom of the list has been expanded as well. In addition to telling you the total size of the files listed, *dir* adds the total amount of

most recent command that starts with the same letters. Or, more simply, press the <PgUp> key at a blank command prompt and a small window will pop up with the entire command history. You can then scroll through it to find your line and execute it directly from the pop-up.

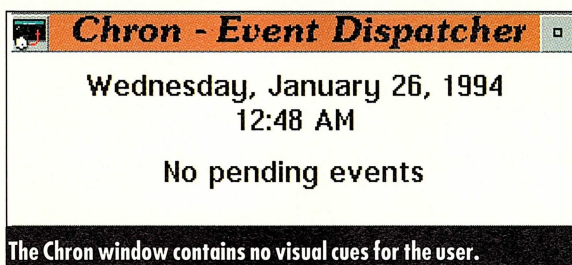
The delete command is another powerful (albeit dangerous) feature that can allow you to delete files in subdirectories underneath the target directory and remove the subdirectories if they are empty. The `cd` command can take you to the last directory used without having to type in the entire name. You can change both drive and directory with the `cdd` command.

A new command language

You may find that OS/2's facilities are incomplete when you are trying to create command (.cmd) files. 4OS2 provides several new commands and constructs to add to your command files. Their new BTM language provides nice new features—and if you've got a lot of experience developing batch files already, you may want to use it. Someone who is just learning the language of command files would be better off learning REXX—both as a command language and as a way to add power to your applications. REXX is built into OS/2 and is used by a number of applications as their macro language. Regardless, 4OS2 can run your existing command files without a problem, so you aren't required to learn a new language.

Aliases

One of the most powerful additions 4OS2 offers is the ability to define an alias. For example, if you often enter the command to list two-column directories, the command `alias d = dir /2` reconfigures 4OS2 so that you only need to type `d` at a command prompt to bring



up the dual-column directory listing. You can assign commands to function key combinations just as easily.

Glee or Flee

If you have fully made the move to GUI you will not be interested in 4OS2. Command-line junkies, though, will find a wealth of new functions here. I could have easily listed a dozen more small touches that make the command line a nicer place to work.

The price does seem somewhat high; I'd like to see JP Software offer a lower-priced version without the batch language for us REXX users. Still, if you're a command-line user, give it a try. It's shareware after all and costs nothing for a test drive. (But remember: if you use it, register it.)

CHRON 4.0

Chron is designed to automate tasks you perform regularly, such as backing up your computer or accessing a host system or BBS. This ability can be especially handy for LAN administrators to schedule server backups, database reorganizations, and other periodic activities. Running these tasks automatically during late-night or weekend hours minimizes the impact on daytime users.

Counter-intuitive user interface

Hilbert Computing decided not to give its customers a standard user interface, and the Chron window has no menu bar. So you can't

avoid reading the manual with this program, because no cues are visible to help you get started.

Instead, click the right mouse button in the window to get a pop-up menu. This technique is fine for setting objects on the desktop, but inside an application, it is obscure and counter-intuitive. Hot keys are equally unintuitive—<Ctrl+N> being the key to create an event.

When entering an event to start a program, you'll find no place in the window to enter the name of the program you want to execute—you have to right-click in the event window to get to another pop-up, which allows you to enter information about the event. This action returns you to the main window in which you must right-click, yet again, to get to the menu and select the page that allows you to enter the time you would like the event to occur. It would be so much simpler if these options were accessible from the main event window. Also, no context-sensitive help is available when working with events. I expect to be able to press <F1> at any time to get help pertinent to my current action.

At this point, I was tempted to simply quit and erase the program. I suspect many users will. Still, I continued to search for the rich functionality that would make the pain worthwhile. To be fair, you can configure the events you want to schedule in many different ways. The ability to schedule Pause and Resume events is helpful as well. If you're going to be on vacation, for example, and don't want events to take place, you can simply start a Pause event, and Resume when you return. That way, you don't have to physically delete the events so they don't try to start executing as soon as you return and restart the system. A full 32K multiple-line edit

Good OCR software can have a dramatic impact on the storage required to move to a more paperless office.

(MLE) control to enter messages allows plenty of space to get your point across.

Glee or Flee

The ability to run programs at specified times is part of the Alarms application included in the Productivity folder of OS/2. Applications designed to replace it would have to provide a lot more functionality and/or a better user interface to justify its purchase. Chron has some functional advantages, such as lengthier messages and the ability to copy message text from the clipboard. And, if they fix the user interface in a future version, it might be worth another look. Until then, stick with Alarms to start your programs and the reminder functionality of your favorite Personal Information Manager for messages.

RECOGNITA PLUS 2.0

OS/2 has been very slim in applications that offer Optical Character Recognition (OCR), which is unfortunate, because good OCR software can have a dramatic impact on the storage required to move to a more paperless office. Storing a piece of paper as a graphic image may take hundreds of thousand of bytes. Using OCR to convert the writing on that paper into a text file can cut the size down to less than 10,000 bytes.

OCR technology helps you locate information you've stored as well. It's easy to search a database for a word or phrase. It's not so easy, however, to search for a particular logo. OCR helps solve many problems. The difficulty comes in doing so under OS/2. Recognita Plus is an OCR product that can read directly from a scan-

ner or perform a recognition function on PCX or TIFF files. However, a couple of major caveats should be kept in mind.

Sparse Scanner Support

Few scanners are supported. In fact, when I first received the package, I could only use an HP ScanJet. After reporting this limitation, I was del-

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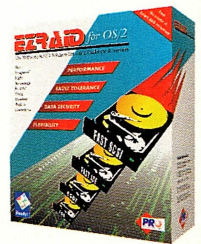
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Reader Service No. 14

ugged with device-driver fixes, some of which even worked. Eventually, I was able to get Recognita's own Roll and Read scanner (an OEMed AVision A100) to work, but it was arduous. Responses to my technical support calls were delayed by the fact that questions had to be answered by the product developers—in Hungary. After several weeks they offered a new device driver that fixed the problem, but once a vendor establishes a track record of shipping a product that simply doesn't work, I become less optimistic and less interested in fixes. If you aren't using a ScanJet, Umax, Epson, Pentax, or AVision scanner, you must save the image as a PCX or TIFF file and import it.

If you're reading from an image file, the file must be saved as Line Art—that means totally monochrome—black and white only. The program refuses to read color or gray-scale files, reporting them as an "invalid file format." I found it very difficult to get smooth character images when reading things in line-art format using most scanners. In fact, in some cases, to get better than 10 percent recognition, I had to scan images in gray-scale and then use Galleria to convert the TIFF files to monochrome. I was able to get recognition of up to about 70 percent using this technique. (Note that the recognition statistics I quote reflect characters recognized correctly out of the total file. OCR software quotes recognition statistics based on the percentage of characters that it thinks it recognized, but it may, in fact, have guessed wrong. It gives itself credit for every "1" that it thought was the letter "l," and vice versa.)

The Good News

Recognita is a Hungarian company and is, therefore, much more sensitive to a wide range of languages than most American companies. They went to the added difficulty of

adding character definitions for the many additional characters with umlauts, circumflexes, and so on, that make up the alphabet of languages other than U.S. English. In fact, they claim support for over 80 languages. I didn't have any documents in Icelandic, so I couldn't verify this claim. I can verify that if you are scanning English documents, you need to switch the system from its default international mode to English-specific. Otherwise, the product has a strong tendency to recognize the n-apostrophe used in contractions as the Spanish n-tilde.

For the international support to be useful, of course, the program should be able to output characters into a text file. Recognita Plus does this well, taking advantage of OS/2's multiple codepage support. But you aren't restricted to ASCII text output. You can save the recognized text in the formats of literally dozens of word-processors.

Unfortunately, this feature also has problems. Recognita doesn't always include the most recent formats. For example, their most current WordPerfect format was for WP 5.1. A WP for Windows setting existed as well but it didn't convert properly. I thought it had removed the paragraph boundaries from the doc-

**Responses to
my technical support
calls were delayed by
the fact that questions
had to be answered by
the product developers
—in Hungary.**

ument until I realized that instead of a tab to start a paragraph, their filter put a tab set command into the data stream, but no tab—accomplishing nothing. By now, DeScribe users are accustomed to the fact that vendors who write OS/2 software don't bother supporting the file format of one of the most popular OS/2 word-processors.

The bad news

I couldn't come anywhere near their claim of "at least 99.9 percent" accuracy on imported images. This inconsistency is at least partially due to the "blocky" nature of line art images. The recognition would be much better if Recognita Plus allowed import of gray-scale images and recognized areas in the darker half of the scale as being legitimate parts of the character.

It's certainly true that the software can only be as good as the scanned image allows it to be. Using a ScanJet IIP, I did move over 99 percent for most standard documents. If you move from standard letters to copy from printed media, the percentage goes down, since text is usually more dense in that format.

Working from media clips presented other problems as well. The facility to create boxes surrounding the text you want to recognize only worked if you actually saved that layout to disk as a template—a needless additional step that only slows down the process. Clips (or letters) that go to multiple pages didn't always append properly—a bug that Recognita acknowledges. You must save the recognized text as two separate files and merge them manually.

The documentation is written for the Windows version of the product, which is different from the OS/2 version in many respects. A small booklet, designed to cover the differences in the OS/2 version, is included. If working through both books to get information isn't bad enough, some

Test Drives

things aren't documented at all, or are documented incorrectly.

Glee or Flee

Once I got the product working, it actually worked quite well. Nevertheless, the gyrations I had to go through with the system and with their technical support staff (including being sent three new versions of the product) made me feel like I was helping them beta-test rather than reviewing shipping code. Of course, by the time you read this review, they should have incorporated the fixes into the shipping product.

If you really need OCR support and can live with a lot of headaches getting the system working, Recognita Plus does a very good job. But don't make the mistake of canceling out of a file save dialog box, you won't be able to save any recognized text again until you close and reload the application.

If you expect to be able to take the product out of the box, read the documentation, and make the product work quickly, I suggest you wait until Recognita gets its act together.

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Recognita Plus 2.0 (\$595)

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Brian Proffitt has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the president of Visionary Research. Brian is the author of two books on OS/2, is a contributing editor for OS/2 Developer and OS/2 Magazine. He can be reached on CompuServe at 75300,1466, or Internet 75300.1466@compuserve.com.

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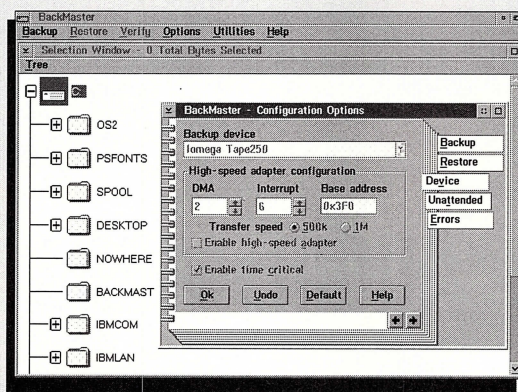
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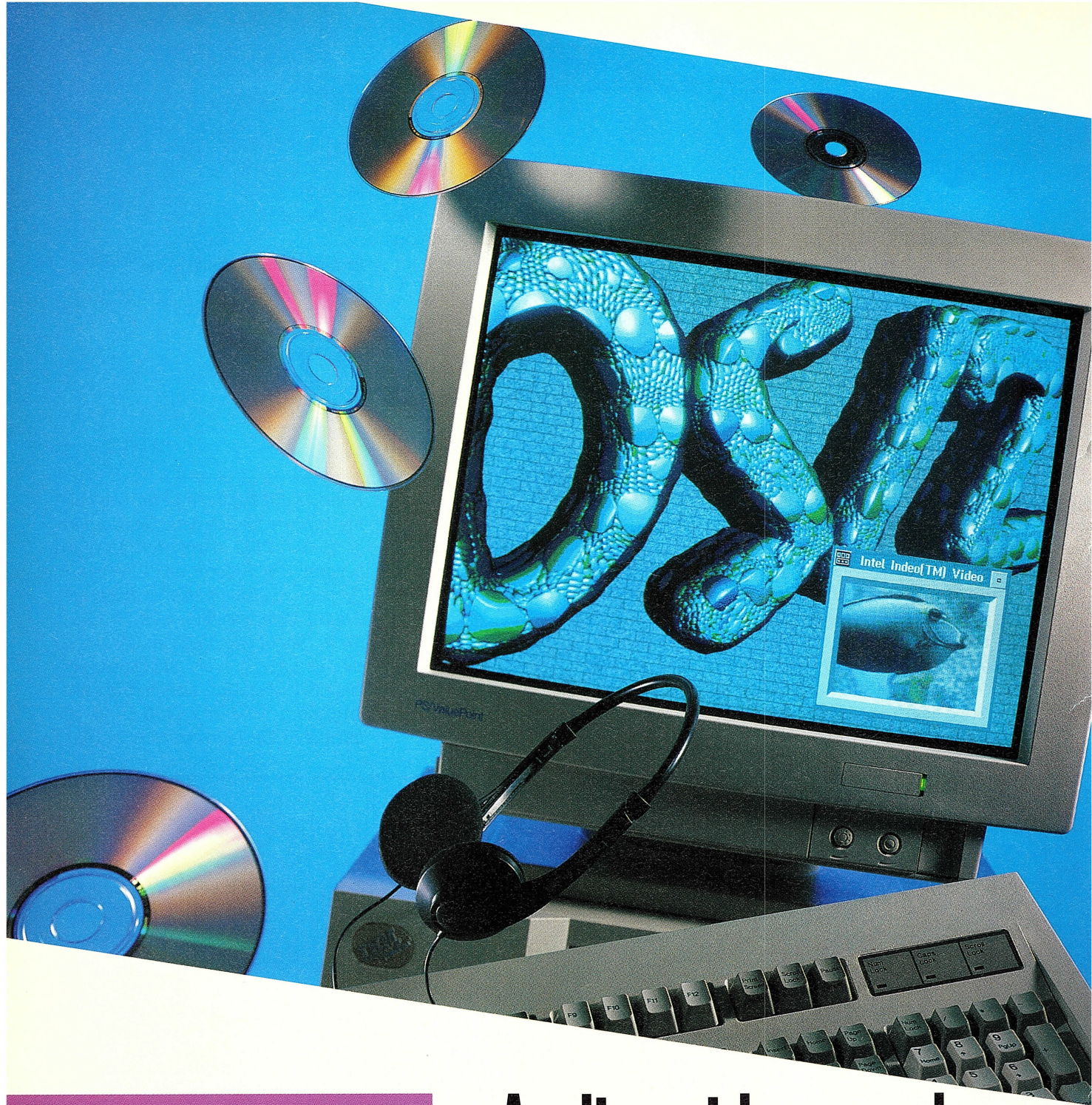
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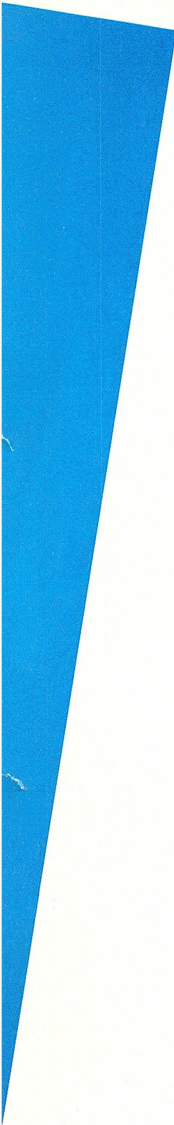
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**Audio, video, and
CD-ROM, oh my!**

BY STEVE LEVENSON



An OS/2 Multimedia Primer

Why has the release of OS/2 2.1 increased the popularity of multimedia buzzwords such as frames per second, JPEG, and scalable resolution? Because OS/2 2.1 is bundled with an add-on module called Multimedia Presentation Manager/2 (MMPM/2). MMPM/2 controls and maximizes the allocation of resources, such as sound cards, CD-ROM drives loaded with visual images, video cassette recorders (VCR), and high-resolution monitors.

To effectively use MMPM/2, it is important to understand how it addresses the requirements to store and playback multimedia elements such as audio and video clips. This article provides a primer on multimedia and clarifies the capabilities and limitations of MMPM/2 so that you can appreciate and productively use the new multimedia features in OS/2 2.1.

The business case for multimedia

Multimedia combines the interactivity of a computer with a natural user interface that includes audio, full-motion video, and images. Many companies believe that the combination of multimedia elements with personal computers will contribute to the efficient creation of higher quality communications. Software companies have been quick to release many products for creating and managing mul-

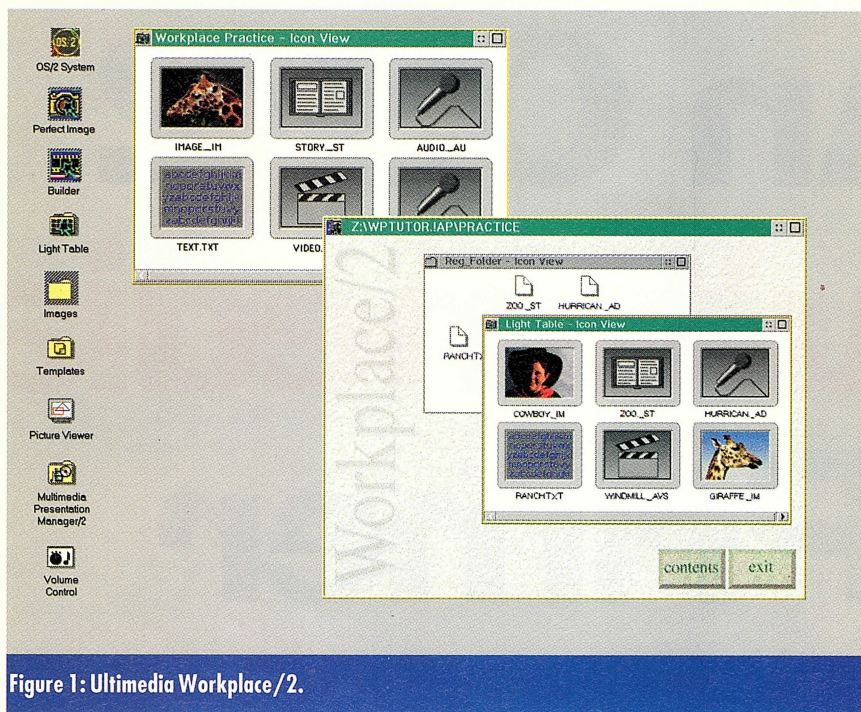


Figure 1: Ultimea Workplace/2.

timedia databases and computer-based training systems.

Multimedia tools range from authoring systems to image browsers. IBM, through its Ultimea Tools Group in Mountain View, Calif., offers several products that exploit OS/2 2.1's environment. Ultimea's Workplace/2 product perhaps best exemplifies the integration of multimedia with traditional data-processing applications. Workplace/2 allows a user to visually manage images, text, audio, and video objects with thumbnails arranged in a folder for easy indexing and retrieval. These multimedia objects can be linked to supported databases such as Oracle, dBase IV, DB2/2, and OS/2 Database manager. Figure 1 illustrates an example of a multimedia clip embedded in a traditional database application.

For multimedia to reach its fullest potential within an organization, it must move beyond the limits of stand-alone technology. Multimedia should be considered a corporate asset and a vital competitive edge, both of which can be

maximized when multimedia is shared throughout an organization. To reach this level of cooperative sharing of multimedia-enhanced communications, a solid framework is required. OS/2 2.1 is the first operating system designed for personal computers to provide such a foundation. Before describing OS/2's multimedia technology, let's examine some background information about the technical requirements for multimedia's audio and video elements so that you can better appreciate OS/2's multimedia features.

Multimedia's Big Appetite

The sudden growth of interest in exploiting multimedia's contribution to traditional applications software has become possible with the combination of fast microprocessors, high-capacity and high-speed hard disks and CD-ROM drives, and image-compression techniques. All these new technologies are necessary to store and manage large multimedia objects such as sound and video.

For example, a 500-page text-

book requires approximately one megabyte of storage. Ten fax-quality images require 640 kilobytes, whereas 10 color or detailed images require 75 megabytes. Five minutes of uncompressed voice-quality audio require 2.4 megabytes of storage, and 52.8 megabytes of storage are required for premium quality audio, such as compact disc and digital audio.

Digitized video requires the greatest storage capacity of all data forms. Without compression techniques, practical storage of digital video is impossible. For example, animation-quality video requires 147 megabytes per minute for a video clip that fills one-quarter of a screen. But with today's data-compression techniques, this animation-quality video can be compressed to 1.44 megabytes (one 3.5-inch disk). A two-hour television-quality movie can be compressed to about two gigabytes of storage.

Shrinking these large data files is possible due to a considerable amount of redundancy in the majority of these computer data files. Such redundant data can be thrown away with absolutely no quantitative loss in content. By removing such information before it is transmitted across a network or to a computer screen, substantial data reduction can occur with minimal subjective effect.

There are two kinds of compression: "lossless" and "lossy." Lossless compression merely removes the redundancy in a signal. Since it never destroys information, the original signal can be exactly reconstructed from the losslessly compressed version. However, most signals do not have very much redundancy. This limits the effectiveness of lossless compression, which tends to produce compression ratios of only two or three to one. Lossless compression is used when it is important to be able to reconstruct the signal exactly, as in the case of financial data records,

where no errors are permitted.

Lossy compression selectively discards less-important information. This method permits much higher compression ratios than lossless compression, often with little or no perceptible difference between the original signal and the signal constructed from the compressed version. Lossy compression for full-color images can be 30 times as great as lossless compression without producing significant distortion because images typically contain "noise" and other details that are subliminal and therefore not perceived by the viewer. Speech, sound, and imagery can be compressed by lossy compression to a far greater degree than by lossless compression.

Since lossy compression discards "less important" information, the critical feature of any lossy method is the way it decides what is important and what isn't. A good com-

pression algorithm will selectively omit the same kind of information that the human sensory system selectively omits to achieve higher compression levels without compromising quality. The human eye and ear capture an enormous amount of data every second, much more than the brain can consider. For example, in normal daylight vision, the color-sensitive receptors of the retina in each eye collect about 800 megabits of visual information each second. The human neural network that connects the eye to the brain automatically and continuously reduces the amount of information that reaches the brain by a factor of 100. Most of the physical information represented in the light signal that falls on the eye is not needed by the brain. This fact is the cornerstone of practical compression algorithms for visual images. The compression scheme used in OS/2 2.1 is based on

the lossy compression concept.

An example of the human neural-network system at work occurs when we view television and high-quality videos. TV and high-quality video images are usually played at the rate of 24 frames per second. Yet we can still perceive full motion at rates of just 15 to 16 frames per second. Images will appear jerky if the frame rate goes below 10 frames per second. (At rates above 30 frames per second, we see no significant increase in motion but an increased perception of greater detail, such as color.)

Most solutions for delivering large amounts of data, video, and sound to the desktop personal computer have centered on hardware solutions, such as specialized video adapters for playing back the compressed video images. Many of today's popular software-only techniques for compressing and decompressing video can be attractive due

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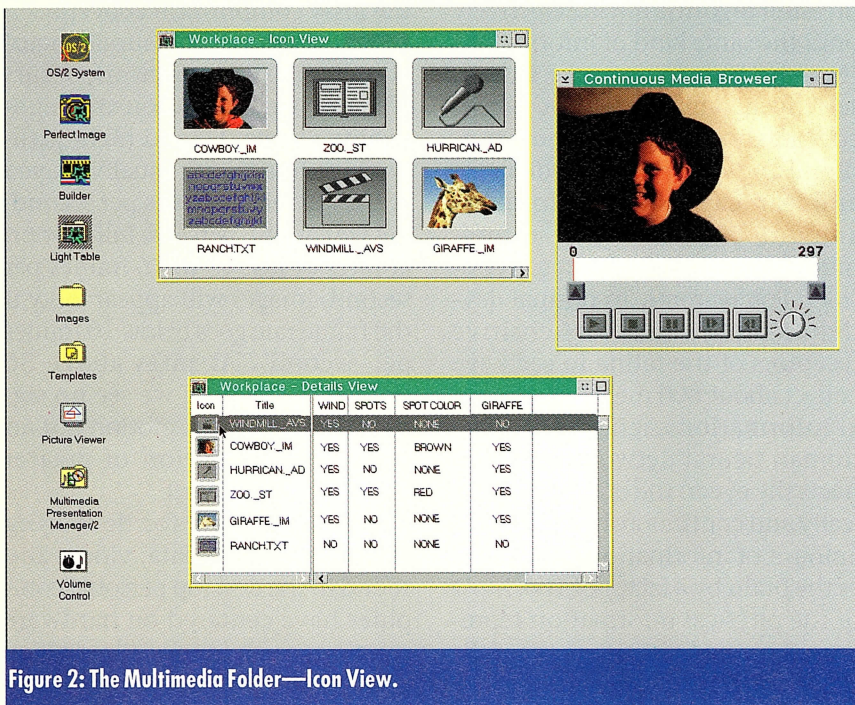


Figure 2: The Multimedia Folder—Icon View.

to their low cost. However, the video quality of these algorithms is typically lower than the hardware-based algorithms. Digital video producers have struggled with trading off the lower quality and affordability of software-only techniques for the higher quality and cost of hardware-assisted video. However, the software-only algorithm landscape has significantly changed with the introduction of the Ultimotion technology in MMPM/2.

Ultimotion

Ultimotion is the name of IBM's software-only solution for playing back compressed video data. While the frame rate, output resolution and color characteristics of a video image are determined when the video is created, the characteristics of how the video is presented to the

viewer are dependent on the capabilities of the playback platform. The playback capabilities depend on several factors, such as the type of microprocessor, display driver, video adapter, and data bandwidth available during playback.

Ultimotion compression algorithms organize the data in a video file so that it can be easily scaled up or down by factors of two as it is decompressed. Furthermore, as the data is decompressed, a sufficiently powered playback system can duplicate the data during output and display the video at four times its original size. This capability results in an effective output size larger than the input size. In this way, Ultimotion can be scaled down on systems incapable of processing the authored video resolution and scaled up on systems with

more processing capability than the authored video requires.

MMPM/2 supports the AVI movie format using either the Ultimotion or the Intel Indeo software motion-video decompressor. Intel's Indeo video technology allows video to be captured (using a video camera or VHS tape) and compressed in one step, as it's being recorded (in real time). Running on a video capture board, such as the Intel Smart Video Recorder, Indeo compresses a one minute video clip from 50MB to 9MB (captured in a 160 x 120 pixel window) and stores it on a hard disk. Without real-time compression, the video must first be captured and digitized, then temporarily saved to a high-capacity hard disk (with more than 50MB for every minute of recorded video). Next, off-line compression must be used to reduce the data to a smaller size to be managed on a PC. (This step can take as long as 30 minutes for each minute of video.)

Files containing embedded video clips might be sent to various desktop PCs with different microprocessors for playback. Faster CPUs can reassemble and display compressed video more quickly than slower CPUs. Therefore, both the Ultimotion and Indeo decompression software were designed to be scalable. When a video clip is played back, the Ultimotion or Indeo software determines what CPU and video adapter are available and automatically adapts the playback quality for that configuration. Ultimotion and Indeo adjust the frame rate at which the file is played back (frames per second) to give the best perceived quality.

For example, MMPM/2 provides a standard resolution of 320 x 240 at 15 frames per second when using IBM's Ultimotion compression techniques. This resolution is currently four times that of other software-only video solutions, such as Microsoft's Video for Windows.

Table 1: Typical frame rates for playing back a video file.			
CPU	160 x 120 pixels	320 x 240 pixels	640 x 480 pixels
Intel 486 SX-25	30 frames/second	15 frames/second	1 frame/second
Intel 486 DX2-66	30 frames/second	30 frames/second	10 frames/second
Intel Pentium	30 frames/second	30 frames/second	20 frames/second

Ultimotion movies require at least a 25MHz 80386 microprocessor and a VGA adapter. Computers with 33MHz 80486 microprocessors are capable of displaying 320 x 240 resolution at 24 frames per second or 640 x 480 resolution at 15 frames per second. (For reference, a standard VGA screen is 640 x 480 pixels so, a 320 x 240 windows is one quarter of the screen.)

Table 1 provides typical frame rates for playing back a video file that was originally recorded at 30 frames per second at different screen resolutions. Frame rates vary depending on the system configuration and the video clip being used.

While Ultimotion is scalable at playback time (from 15-24 frames per second or higher and from 320 x 240 to 640 x 480 resolution) the scalability is determined by the amount of information that is

encoded in the data stream (file) when it was created. The amount of data initially captured in the data stream determines the maximum playback characteristics that a particular stream can achieve. In turn, the processing capabilities of the playback system determine how much of the data can be processed and presented during playback. Users can make trade-offs between the frame rate and window size, depending on which aspect is more important for their application.

If the processor of the playback PC cannot support the frame rate of the video movie (recorded at 30 frames per second, for example) Ultimotion will automatically scale down the video to match the processor speed. The audio will play back at the speed it was originally recorded and the video will stay synchronized with the audio.

The playback platform is often constrained by the speed of CD-ROM drives and the amount of data that can be transferred over a local-area network (the network bandwidth). Full-motion video at 15 frames per second seems to be the current limit of popular CD-ROM and LAN technology. The current speed of most CD-ROM drives limits the number of frames per second, so it is generally preferable to display smaller frames with lower resolution, as they contain less data than larger frames with higher resolution.

Most corporations will probably store video and audio objects on a main file server and deliver them through LANs to individual users at their own workstations. So, the average speed of 15 frames per second for full-motion video is consistent with the speed of many current LAN adapters and wiring

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installations.

Ultimotion's approach to adapt what the viewer sees during playback to the power of the playback system is reasonable given the limits of current technology. Furthermore, Ultimotion gives priority to the audio data to ensure that it stays in sync with the video; if necessary, it will decrease the speed of the frame display.

Effectively using video, sound, images, and text in the multimedia systems of the 1990s imposes requirements that are well beyond anything ever imagined during the design of the DOS operating system and Microsoft's Windows graphical environment in the 1980s. Word processors, spreadsheets, and most other popular application software can patiently wait until another application has yielded control of the central processing unit (CPU). Multimedia applications generally have very little patience in waiting for the CPU because the longer the wait, the greater the loss in the quality of the presentation. Time delays effect the quality of multimedia presentations because multimedia data objects differ from traditional data-processing files not only in their size, but in their very nature.

Multimedia data objects such as audio and video are time-based, continuous datastreams of information that must be delivered at a constant rate with little delay between the source (video camera or hard disk) and the target (the screen) to preserve the perception of motion. For example, digital audio produces two continuous datastreams that flow together at 1.4 megabits per second. Compressed VHS-quality digital video played off a CD-ROM produces a datastream that flows at 1.2 megabits per second. Synchronizing and controlling the audio stream and video stream that together form a movie segment is a major task. MMPM/2 can control

the CD-ROM drive and the audio and video datastreams that flow from these devices.

MMPM/2 contains a superset of the media control interface (MCI) application program interface (API) that is included in Windows 3.1 for controlling multimedia devices. Then, using OS/2's multitasking features, MMPM/2 includes datastream management. Therefore, applications written specifically for OS/2 2.X can control and synchronize the audio and video datastreams, not just play and record on multimedia devices.

DOS, with its single-tasking orientation, just cannot support this need for multitasking and priority scheduling. Imagine how disconcerting it would be if the sound of tennis racket hitting a ball cannot be heard at the same time that a video clip displays the racket hitting the ball.

OS/2 is well suited for multimedia

Currently, MMPM/2 is not integrated within OS/2 2.1 in the same way that Windows 3.1 support is integrated. The main installation procedure for OS/2 2.1 provides you with the option of installing Windows 3.1 support, along with many other options. However, the installation of MMPM/2 is not managed by the main OS/2 2.1 setup program. A separate Multimedia Install program called **MINSTALL** must be used. In fact, the MMPM/2 extensions to OS/2 2.1 were packaged on diskettes with different colored labels in the first production run of the OS/2 2.1 retail package.

MMPM/2 superiority over other multimedia environments is largely derived from several of OS/2's advanced memory management features. These advantages combine to provide audio and video lip sync, for example, in a manner that surpasses other desktop operating

environments.

OS/2 2.1 uses *preemptive multitasking* to play video clips and sound bites at the same time, providing the life-like quality of TV shows and movies. Preemptive multitasking enables the CPU to effectively manage the playback of the video segment on the graphics card and the sound segments on a sound card. In contrast, *cooperative multitasking* techniques, which are used by such systems as Microsoft Windows, assume that software developers (or video image and sound bite providers) will adhere to the same set of rules of sharing the CPU.

Protected memory prevents system failures that result when one application corrupts the memory space used by another application. *Flat* memory addressing allows OS/2 to handle the many megabytes of data that comprise the graphic and sound objects associated with multimedia applications. System performance is significantly enhanced when the operating system can juggle large files in one step rather than in smaller chunks. The OS/2 2.1 environment enables new features, devices and data objects to be added to the MMPM/2 environment as new hardware and software products come to market.

MMPM/2 Features

MMPM/2 features and functions are categorized in the following three groups: device drivers, mini-applications, and multimedia subsystems. Here is a brief description of some of the important features of each group.

Device drivers control hardware add-on products such as CD-ROMs, and sound and graphic adapters. OS/2 2.1 contains drivers for popular products such as the Creative Labs Sound Blaster and Media Vision Pro Audio Spectrum 16 sound cards, as well as the Hitachi, NEC, Sony, and Toshiba CD-ROM

drives. Specific device drivers can be selected by using the Multimedia Install program and clicking on an object representing a particular sound card or CD-ROM drive. Attached to each object is a list of required files and *config.sys* updates, which are loaded when the object is selected.

MMPM/2's multimedia mini-applications allow you to immediately experience some of the potential offered by adding sound, video, and audio to your computer systems. For example, the CD player enables standard audio compact discs to be played on supported CD-ROM players. The Digital Audio Player allows digitally recorded audio, such as the sound bites included in MMPM/2, to be played through one of the supported audio cards. The Digital Video Player supports the AVI format using either the Ultimotion or Intel

Indeo software motion-video decompressor for playing video and synchronized audio without the need for special video hardware.

The Multimedia Data Converter application can be used to convert certain multimedia files to a different format. For example, you can convert from a Creative Labs voice file format to a .wav digital audio format or from an IBM M-Motion image format to an OS/2 bitmap format.

The Multimedia Subsystem functions provide common services needed by a range of multimedia applications, such as the need to ensure that video or audio data is reproduced smoothly on the screen or speaker. One such component is the Media Control Interface (MCI), which is an easy-to-use description language that allows you to take even more control of the multimedia hardware

(such as CD-ROM drives) than is available through the use of the mini-applications we described earlier. This language consists of commands that can be embedded in a C language procedural call or a REXX program.

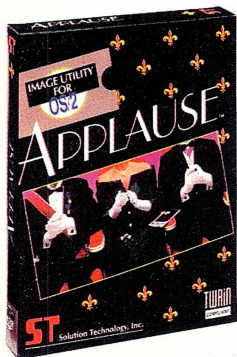
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Steven Levenson is a frequent contributor to trade publications and has written several books on networking and OS/2, including Now That I Have OS/2 2.1 On My Computer What Do I Do Next? He can be reached electronically at slevenson@mcimail.com.

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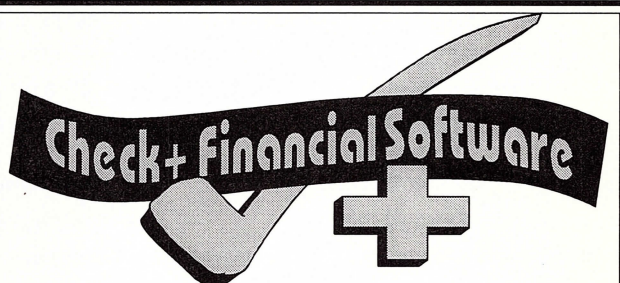
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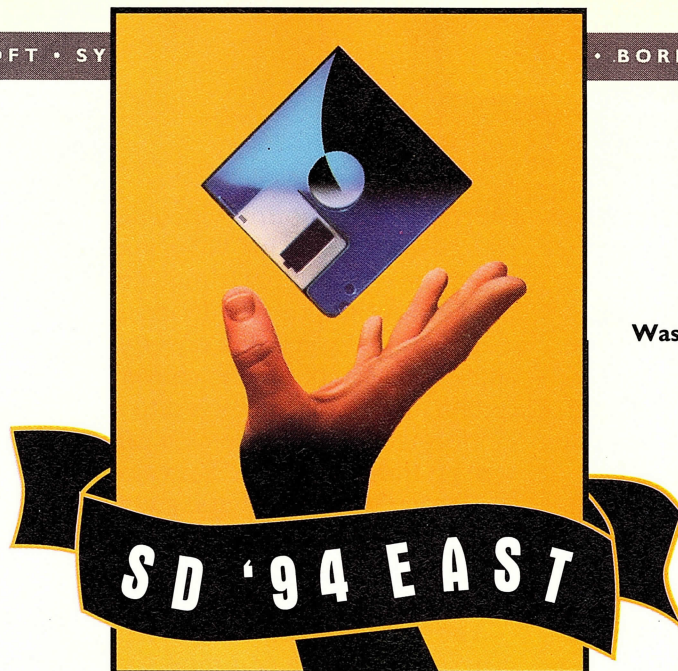
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At Your Command

Understanding the differences between the DOS and OS/2 command prompts. **By Eric Pinnell**

Many OS/2 users have a love/hate relationship with graphical user interfaces. They despise using a GUI with its attendant mouse or trackball and feel that a quick series of keystrokes is a much more efficient way of moving files and performing other system maintenance. Some OS/2 users, probably those who have evolved from DOS power users, even choose not to load the Workplace Shell at all, preferring to use OS/2 as a "super DOS" (IBM originally designed OS/2 to be as backward compatible with the DOS command structure as possible).

If you're one of those former DOS power users, you're lucky: The OS/2 command prompt system is incredibly similar to the DOS command prompt. However, if you're planning to transplant your DOS familiarity to OS/2, you'll need to note some important differences. For example, OS/2 is a preemptive, protected-mode operating system—DOS is not. Therefore, OS/2 can run multiple programs simultaneously, while DOS cannot (some DOS add-on products such as Microsoft's Windows or Quarterdeck's Desqview provide limited forms of multitasking).

With those major architectural differences aside, there are differences in the actual commands and command options that can be used from the OS/2 2.1 command prompt. Of course, there are differences between different DOS versions, including Microsoft's MS-DOS, IBM's PC DOS, and Digital Research's DR DOS (now owned by Novell). For the purposes of this article, we'll compare OS/2's command line to perhaps the most familiar and generic version of DOS, Microsoft's MS-DOS 5.0. We'll assume that you have a good working knowledge of DOS, and are primarily interested in learning about what's new with OS/2.

Commands

Let's immediately dispense with those DOS commands that simply aren't supported by the OS/2 command

line—many of these commands *do* have OS/2 equivalents, but we'll discuss those later. Note that all of these

Table 1: Commands unique to OS/2 that are not found in DOS.

Command	Details
ansi	Turn on/off extended keyboard and display support.
autofail	Displays system error information.
boot	Dual boot between DOS and OS/2.
cache	Loads/monitors HPFS disk cache.
cmd	Start an OS/2 session.
comp	Compare set of files with other files
createdd	Create dump diskette.
ddinstal	Installs new device drivers.
detach	Start application in background.
dpath	Specifies search path for data files.
eautil	Splits and joins extended file attributes.
fdiskpm	Presentation Manager version of fdisk.
keys	Retrieve previously issued commands for reuse.
makeini	Create new <i>os2.ini</i> file with defaults.
move	Moves files from one directory to another.
patch	Allows you to patch files.
picview	Display a picture file
pmchkdsk	Same as chkdsk, plus displays usage chart.
pstat	Displays process, thread, memory, and DLL information.
setboot	Switch operating system and set parameters for Boot Manager.
spool	Start printer spooler.
start	Start OS/2 program session.
syslevel	Display operating system service level
syslog	Start/stop System Log file.
trace	Set or select system trace.
tracefmt	Display formatted trace records.
unpack	Decompresses compressed files.
verify	Confirms data has been written to disk.
view	Display help files.
vmdisk	Creates image file of DOS startup diskette.

Like DOS,

OS/2 SUPPORTS CERTAIN "HOT KEYS" THAT ARE USED TO EDIT COMMANDS. COMMANDS ARE EDITED WITH <ARROW>, <BACKSPACE>, AND <DELETE> KEYS.

DOS commands (except those marked with an asterisk) can be used from an OS/2 VDM (Virtual DOS Machine): **append**, **assign**, **basic**, **break**, **comp**, **ctty**, **debug**, **doskey**, **dosshell**, **edit**, **edlin**, **emm386**, **exe2bin**, **expand**, **fastopen***, **fc***, **for**, **graphtbl***, **graphics***, **join**, **loadhigh (lh)**, **mem**, **mirror**, **nlsfunc***, **qbasic**, **setver**, **share***, **subst**, **sys***, and **unformat***.

OS/2 and DOS have a great deal of commands that *are* common, however. The command parameters are almost always exactly like the DOS equivalents. Things like wildcards, directory and path

names, and so on work the same under OS/2 as DOS. The common commands between DOS and OS/2 are: **attrib**, **backup**, **chcp**, **chdir (cd)**, **chkdsk**, **cls**, **command**, **copy**, **date**, **del (erase)**, **dir**, **diskcomp**, **diskcopy**, **exit**, **fdisk**, **find**, **format**, **help**, **keyb**, **label**, **mkdir (md)**, **mode**, **more**, **path**, **print**, **prompt**, **recover**, **rename (ren)**, **replace**, **restore**, **rmdir (rd)**, **set**, **sort**, **time**, **tree**, **type**, **undelete**, **ver**, **vol**, and **xcopy**.

Now, let's get to the meat of the issue—those new OS/2 commands that exploit its design as a multi-threaded, multitasking operating system. If you're planning to

become an OS/2 power user (at least from the command line), you should experiment with these new commands, listed in Table 1.

Batch files

OS/2 batch files (called command files) use a superset of the DOS batch language. These command files support the familiar DOS batch file commands, **call**, **echo**, **for**, **goto**, **if**, **pause**, **rem**, and **shift**. Note that OS/2 command files are named with a **.cmd** extension, not **.bat**. As you'd expect, OS/2 runs DOS batch files unmodified in a VDM. In addition, OS/2 command files support some file commands that are worth exploiting:

- **Endlocal**: Restores drive, directory, variables in effect before **setlocal** issued.
- **Extproc**: Defines an external batch file processor
- **Setlocal**: Sets the drive, directory,

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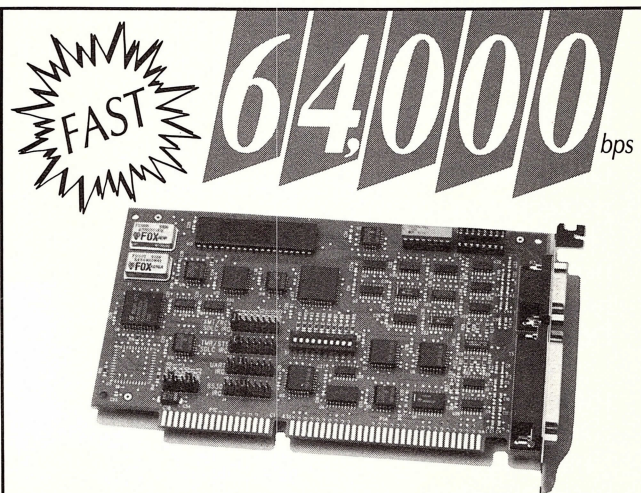
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ry, and variables local to the current drive.

Config.sys parameters

When it comes to the *config.sys*, only a few parameters—**buffers**, **country**, **device**, **files**, and **rem**—are common between DOS and OS/2. And certain DOS *config.sys* parameters aren't used by OS/2, but *are* used by the VDM *config.sys*, which confuses matters. These parameters are **break**, **devicehigh**, **dos**, **drivparm**, **fcbs**, **install**, **shell**, **stacks**, and **switches**. The payoff comes with the wealth of new OS/2 *config.sys* parameters not found in DOS, which are described in Table 2.

Command Line Symbols

OS/2 supports many of the same types of symbols as those used as DOS:

- > Redirects output; replaces the existing file.
- >> Appends redirected output to existing data.
- | Pipes output.
- || Allows command to run only if the previous command fails (or operator).
- ^ Allows input of command symbols as text.

OS/2 also supports several symbols that are not found in DOS:

- && Allows a command to run only if previous command succeeds (and operator).
- & Separates multiple commands.
- () Groups commands.
- " Encloses HPFS file names with embedded spaces: "*Sales Figures*"

Keyboard Support

Like DOS, OS/2 supports certain "hot keys" that are used to edit commands. Commands are edited with <Arrow>, <Backspace>, and <Delete> keys. The <Insert> key toggles between Insert and Over-type modes. <Ctrl+Left> and <Ctrl

+Right> move the cursor left or right one word at a time. The <F3> key recalls the previous command and <Esc> cancels an entry.

If you issue OS/2's **keys on** command, you can use the up and down arrow to scroll through all the previous commands. Having **keys on** will disable the <F3> hot key used to recall the previous command line, however. The <Ctrl+C> break is not normally supported by OS/2 applications, but is supported in VDMs.

Languages and utilities

OS/2 does not include its own native version of BASIC, but does include the familiar old BASICA and more powerful QBASIC interpreters. If you're looking for a language that exploits OS/2's power, however, you should install the REXX (ReXecutable Executive) language. REXX is tremendously useful for batch processing, and is fairly quick.

Just as with the BASIC languages included with OS/2, the REXX that is supplied with OS/2 is not a compiler (it does not translate your programs into actual machine code), but is, instead, a slower interpreter.

OS/2 comes with several text editors. These are the E text editor (in the *c:\os2* directory), and the *epm* editor (in *c:\os2\apps*). All of the other mini-applications included with OS/2 (commonly called "applets") are graphical Presentation Manager tools, and thus require the Workplace Shell to run.

Macros

OS/2's Virtual DOS Machines support DOS macros. However, OS/2 uses a different system for its own macros. You can use the E editor to create a file and save it with a .e extension. (see Steve Gallagher's "A Secret Guide to the Enhanced Editor," OS/2 Magazine, July, 1994, pp. 23-29—ed). Then, using the ETPM

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compiler (not included with OS/2), you can create a .ex file that is an executable macro file. The REXX programming language can provide many of the capabilities of DOS macros from within its own programs.

Files

As mentioned earlier, OS/2 uses the same sort of wildcards for its commands as DOS does. So, for example, to find a list of all files that end with .txt, you would type **dir *.txt**.

Drives, directories, and path

names all work the same way under OS/2 as under DOS. The one difference is that HPFS file systems can support up to 254 characters in the file name. OS/2 uses file redirection exactly like DOS does. So, it is possible to say **dir *.exe >> dirlist.txt**.

Unlike DOS, OS/2 does not include a file undelete command. On the other hand, if you have the **deldir** variable set in your *config.sys* file, then your deleted files are automatically copied to the directory specified in the **deldir** statement.

Similarly, OS/2 does not have an **unformat** command. Thus, if you format a drive under OS/2, it will permanently wipe out all data and files. Be sure to save critical data with a backup before using **format**.

OS/2 does not support drive/directory substitution via the **subst** command. Sharing of files via the **share** command is not permitted, as each OS/2 application must have exclusive access to a file (files are locked).

System I/O

Disk caches for FAT and HPFS systems are controlled by the **diskcache** and **cache** statements, respectively. Because two different cache systems are used by the two different file systems, it is not recommended to use both FAT and HPFS file systems unless you have enough RAM to devote to both caches. You should also note that HPFS support takes additional RAM because of the size of the HPFS file drivers.

Like DOS, you can set up a RAM disk under OS/2 by loading the *vdisk.sys* driver from your *config.sys* file. System devices such as COM1, LPT1, and so on are used by OS/2 the same way they are in DOS.

Printing

The default printer device under OS/2 is called **prn:**. So, by issuing the command **copy output.txt**

Table 2: New OS/2 *config.sys* parameters

Parameter	Description
autostart	Initialize Workplace Shell components.
basedev	Set base device driver.
bookshelf	Set location of on-line documentation (.inf) files.
cache	Set cache size for HPFS file system.
codepage	Set code pages for international support.
comspec	As per os2shell.
deldir	Set directory for deleted files to be stored.
devinfo	Specify keyboard layout and character tables for display.
diskcache	Sets cache size for FAT file system.
dpath	Set path for application data files.
epmpath	Set path for Enhanced Editor (EPM).
glossary	Set location of Workplace Shell glossary file.
ifs	Set installable file system.
iopl	Set I/O privilege level.
keys	Enable recall list for command processor.
libpath	Set DLL path.
maxwait	Set time thread can be idle before boosting priority.
memman	Set swapper defaults.
objectsnoozetime	Set time DLL is idle before being unloaded.
os2_shell	Set command line interface program.
pauseoneror	Set system pause if <i>config.sys</i> is in error.
printmonbufsize	Set printer buffer size.
priority	Set thread priority.
priority_disk_io	Set foreground disk priority on/off.
protectonly	Enable/disable DOS and WIN-OS/2 sessions.
protshell	Set session management program.
restartobjects	Set objects to be restarted when system rebooted.
rmsize	Set available DOS RAM.
runworkplace	Run Workplace Shell.
shellexceptionhandler	Turn off Workplace shell exception handler.
swapfile	Set per swappath.
swappath	Set location of OS/2 swapper file.
system_ini	Set location of system .ini file.
threads	Sets maximum number of threads.
timeslice	Set timeslice before thread gives up CPU.
user_ini	Set location of user .ini file.
video_devices	Specify video device available on system.
vio_8514a	Set 8514 video device for Virtual I/O.
vio_svga	Set Super VGA video device for Virtual I/O.
vio_vga	Set VGA video device for Virtual I/O.
vio_xga	Set XGA video device for virtual I/O.

prn, you would send that output file's contents to the printer. However, if you use the **print** command instead, you send that text to OS/2's spooler for background printing, and thus control is immediately returned to you.

Hold the GUI

You don't need to run the Workplace Shell to take advantage of OS/2's raw capabilities. Here's how to turn it off: Go into your *config.sys* file, and find the lines marked **set runworkplace** and **set protshell**. Change the parameter after each of these from *c:\os2\pmshell.exe* to *c:\os2\cmd.exe*. The **protshell** statement is the protected-mode shell, which is loaded at boot time. The **runworkplace** command initializes the workplace shell whenever a process calls it. We've now told OS/2 to run the command-line interface, *cmd.exe*, rather than the

Workplace Shell, *pmshell.exe*, upon boot-up.

What happens if you try to launch a graphical application (like one of the included OS/2 applets) from the *cmd.exe* shell? It starts great: The Workplace Shell will be loaded, and your application will run. However, you won't see the OS/2 desktop at all, and if you attempt to quit the application, the system will hang due to a bug in OS/2 2.1.

Why might you want to take this step? Running OS/2 without the Workplace Shell will provide significantly improved performance for character-mode applications running on systems with low RAM. OS/2 in 4MB is a realistic figure if you choose to run it without the Workplace Shell.

Wrapping it Up

Most popular DOS commands run

under OS/2 just the way you'd expect them to. So, rather than launching a DOS command-line for manipulating files, try to get used to using an OS/2 command line. Then, explore the new OS/2 command-line commands.

As for myself, I find the Workplace Shell to be a compelling advantage of OS/2. If only OS/2 had an integrated file-management utility included, I'd find few reasons to use the command line at all. But if you're one of those DOS power users (or maybe even a UNIX expatriot) who prefers the command line, you will find the move to OS/2 a fairly easy and comfortable experience.

Eric Pinnell is an OS/2 developer based in Montreal West, Quebec, and is an active Team OS/2 member. He can be reached via CompuServe at 70031,435.



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To Preload, or Not to Preload

Why aren't more hardware companies pre-installing OS/2? By Esther Schindler

If you bought a new PC in the last few years, you already know that nearly every machine is sold with Microsoft's MS-DOS and Windows pre-installed. If you're working at home or in a small office, and chose to use OS/2 instead, you probably purchased a copy of OS/2 and installed it yourself. That approach might be acceptable for the people who think a weekend spent wrestling with a recalcitrant CD-ROM drive is more fun than watching the SuperBowl. But it just doesn't cut it for people whose idea of "it's a great product" is "I took it home, turned it on, and it worked." Those people need, and want, OS/2 to be pre-installed and pre-configured.

OS/2 Magazine set out to discover which mail-order vendors pre-install OS/2 on the computer systems they sell. Whether or not a company sold or installed OS/2, we asked about OS/2 service and support. The answers may surprise you. They certainly won't delight you.

Those That Do

Of the 21 companies who responded to our survey, eight will pre-install OS/2. This isn't quite as good as we might have hoped, but it's better than we had feared. Of course, more than 100 companies chose not to answer our questions, including some of the best-known computer companies in the United States—you'll need to draw your own conclusions

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there.

Few of the companies will tell you in their advertisements that they are willing to install OS/2; none answered our survey question asking why they don't advertise this benefit. When I called one vendor, to put him on the spot, he acted as if including an OS/2 Ready! logo was a brand-new, innovative idea. Thus, if you're in the market for a new computer, it would be to your advantage to specifically ask each vendor if OS/2 can be pre-installed—you

might be pleasantly surprised by the answer. (Companies that do advertise their OS/2 systems include Mitra, Micron, Cypress, and IBM-PC Direct.)

You may have to pay extra for the OS/2 installation. For companies that charge extra, the charge is usually nominal (\$40 from System Dynamics, \$25 from USA Flex). Micron, which was just beginning to offer OS/2 at the time this article was written, was still uncertain about what charge, if any, OS/2 would add to the sale.

But will it run?

As you might expect, most of the companies that will pre-install OS/2 formally test OS/2 with their systems and components and will provide technical support for OS/2 users. Their technical support staff probably won't tell you how to install fonts, but if you call them to report difficulties with a video driver, the fully supportive companies should help you solve the

Table 1: Companies that will pre-install OS/2.

We asked if they charge extra for OS/2 installations, how they format the hard drive, and what type of OS/2 testing and technical support they provide.

Company	Sales Phone #	Charge Extra	Format	Testing	Tech Support	RS#
CompuAdd	(800) 627-1908	No	FAT	Formal	Formal	154
Cypress	(800) 728-6688	No	HPFS	Formal	Formal	155
Dell	(800) 979-3355	\$145.29 + 60 installation	unreported	Formal	Formal	156
IBM PC Direct	(800) 426-2968	No	FAT	Formal	Formal	157
Micron	(800) 347-3490	unknown	unreported	Formal	Formal	158
Mitra	(800) 324-1441	No	HPFS	Formal	Informal	159
System Dynamic Group	(800) 373-6467	\$40	HPFS or FAT	Formal	Formal	160
USA Flex	(800) 967-9130	\$25	unreported	Informal	Informal	161

Table 2: Companies that won't pre-install OS/2.

We asked what kind of testing and technical support they offer for OS/2 users.

Company	Sales Phone #	Testing	Tech Support	RS#
ACER Direct	(800) 239-2237	Formal	Informal	162
Ambra	(800) 252-6272	unreported	unreported	163
Ares	(800) 322-3200	unreported	unreported	164
Comtrade	(800) 969-2123	Informal	Informal	165
Dell Factory Outlet	(512) 728-5656	None	None	166
Drake International	(800) 244-7800	unreported	unreported	167
Gateway 2000	(800) 846-2059	Formal	Informal	168
IDER	(818) 288-0709	Component certified	None	169
Insight	(800) 998-8071	Informal	Informal	170
Midwest Micro	(800) 572-8844	None	Formal	171
Tri-Star Computer	(800) 800-7668	Informal	None	172
Twinhead	(800) 995-8946	Formal	Formal	173
Zeos	(800) 272-8993	None	Informal	174

problem.

However, don't assume that if a company will install OS/2, all of its technicians have been specifically trained in OS/2. Some have, some haven't. Before you plunk down your hard-earned cash, ask.

The companies that don't sell OS/2 are erratic about OS/2 system testing. Some test their computers and will certify that a system you buy from them will work with OS/2. Some informally test, or tell the prospective buyer that "we have lots of people using OS/2 on our systems without any problem." One company doesn't test OS/2, but makes sure that OS/2 dri-

vers exist for all of the components they use. Other companies have never loaded OS/2 on any of their systems.

The technical support also varies. Some companies won't pre-load OS/2, but will offer to help you if you run into any problems. Others, like IDER, provide no OS/2 technical support whatsoever.

Many companies provide a mixed message in their support. Although many OS/2 Magazine subscribers own Gateway 2000 computers, Gateway 2000 doesn't pre-load OS/2. However, the company formally tests OS/2 and claims that all of its technicians

know and can support it. Twinhead does formal testing and will provide OS/2 technical support, even though they don't sell OS/2 directly. However, they report few customer requests. Midwest Micro does no OS/2 testing at all, but there's an OS/2 specialist in their technical support department; with no system testing, one wonders how overworked that person must be.

Those that don't

In many cases, I gathered the information for this survey by calling the companies as an ordinary buyer who was interested in an OS/2-ready system. In all of my conversations with the staffs of the direct-mail companies, I'm pleased to report that I was never given incorrect information about OS/2. When asked for recommended RAM, disk space, and graphics-resolution requirements, every vendor had reasonable recommendations.

If you buy a system and it doesn't work with OS/2, all of the companies say that they will take it back within 30 days. How hard you'll have to work to prove that it doesn't work isn't clear. Zeos says that they'll take the computer back if there's a hardware conflict, but they expect you to talk with IBM first to establish that that's really the problem.

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And What About the Future?

None of the vendors who pre-installed OS/2 have been overwhelmed with orders. Except for Mitra, none report that more than 25% of their sales are OS/2 systems. That's understandable, considering that only a few of those companies even advertise that OS/2 is available. It probably isn't coincidental that Mitra has the highest percentage of OS/2 sales, since they clearly talk about OS/2 in their marketing material.

We asked the companies who didn't sell OS/2 what would have to happen to make it more of a success in the direct market. Two answers were repeated again and again: more customers have to specifically request that OS/2 be included, and IBM has to be ruthless in its price competition. One vendor said, "IBM has to 'give away' the software, ideally with a decent application thrown in."

So, how can you buy a computer system that includes OS/2? Your best bet is to buy from one of the vendors listed here. Or, call another vendor you'd like to deal with, and tell them that you'll spend your money with them, but the system must have OS/2. It's up to IBM to cut its financial deals; you and I can't have much impact there. But, after I spent days looking at a stack of faxes that all said, "customer requests" and "the customer demand has to be there," I can reach only one conclusion. You have to make it absolutely crystal clear to the direct-market vendors that you want OS/2 on your new computer system—or you won't get it.

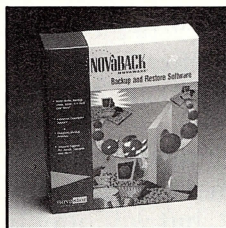
Esther Schindler is a computer consultant and writer. She is a contributing editor to OS/2 Magazine, sysop of the ZiffNet Executives On-Line forum on CompuServe, and author of The New Riders Guide to Modems, from New Riders Publishing. You can reach her on CompuServe at 72241,1417.

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Configuration made simple

Working with DOS and Win-OS/2 Settings by Lenny Bailes

OS/2 has a powerful multitasking engine hidden beneath its "graphic" chassis. In "Desktop Tuning Tips" (*OS/2 Magazine*, April 1994, p. 43), we explored a few of the controls available for DOS and Windows sessions, learning how to create and use custom *autoexec.bat* files to load separate Terminate and Stay Resident (TSR) programs and separate **PATH** statements for individual session requirements.)

This month, let's look at those other options available in the DOS and Win-OS/2 session settings that allow you to further fine tune application performance. Since each session is an independent "Virtual DOS Machine" (VDM), the options you choose for memory management, access to hardware ports, and the video subsystem can significantly affect individual application performance.

OS/2's ability to run separate copies of DOS "image sessions" affords additional, undocumented options. We know that OS/2 is officially incompatible with Microsoft's DoubleSpace disk-compression technology. Yet, an OS/2 "boot image" session can provide read-only access to DoubleSpace compressed drives or both read and write access to Stacker 3.1/4.0 drives for DOS and Windows applications.

Working With Session Settings

When you install OS/2 or use the "migrate applica-

tions" feature, DOS and Win-OS/2 session settings are set up automatically. If OS/2 has your programs in its application database, the settings are configured for overall compatibility with the average hardware system. However, those default settings can be tweaked, especially if you're interested in optimizing telecommunications, saving memory, and speeding up multitasking.

To customize a DOS or Windows program's performance, open the settings book to the Session Page and click on the DOS or Win-OS/2 Settings button. The list

of options that appears is almost identical for either application type. The choices may look somewhat daunting, but you won't need to work with all of them. The settings can be broken down into four basic performance categories:

- Startup options
- Hardware (port and video) options
- Memory-management options
- Multitasking options

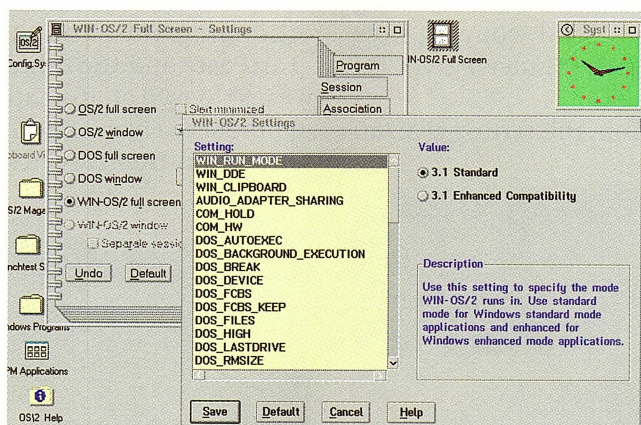


Figure 1: The **Win_Run_Mode** option in the Win-OS/2 Session Settings lets you choose either Standard or Enhanced compatibility mode for your Win-OS/2 sessions.

Win-OS/2 settings

The list of options that appears for Win-OS/2 contains three choices that don't appear in the DOS settings but, otherwise, both lists are identical. **Win_Run_Mode** toggles between the Standard and Enhanced compatibility modes of Windows. The default Standard Mode setting will yield slightly more memory, and slightly better performance for most applications. Some

Windows programs (Caere's OMNIsCan and Word-Perfect 6.0 for Windows, for example) won't start unless you select the Enhanced Compatibility Mode.

The **Win_DDE** setting controls whether Windows can share DDE data between multiple Windows and OS/2 programs. **Win_Clipboard** lets OS/2 and Windows programs "publicly" exchange clipboard images. You can save some memory and speed up system performance by turning both options off. The price is that you'll only be able to cut and paste data between Windows programs running in a single session. To cut and paste with OS/2 applications or restore DDE data links to OS/2, turn these settings back on. (If your seamless Windows apps are configured to run in single session, you can turn both options off and continue to share data.)

DOS_Autoexec (discussed in April) and **DOS_Background_Execution** are other settings that may be important to Windows programs. **DOS_Background_Execution** should be left on if you want DDE to link information in multiple applications (for example, automatically update an Excel spreadsheet embedded in a Microsoft Word document). If you don't need DDE, turning off this setting speeds up system performance.

Hardware Options

The following settings affect speed and compatibility in both DOS and Win-OS/2 sessions:

- **HW_ROM_to_RAM:** When turned on, this setting functions like DOS Shadow RAM, copying slow ROM code to faster memory. The result is faster CPU instruction processing.
- **HW_TIMER:** When turned on, this setting gives an

application direct access to hardware timer ports. It is useful for games and other timer-sensitive programs.

- **COM_HW:** Enable this setting for telecommunications programs. When **COM_HW** is on, an application has direct access to serial ports, instead of needing to use DOS interrupts.
- **COM_HOLD:** Enable this setting in telecommunications programs. Turned on, this setting forces a serial port to remain open until the session ends.
- **VIDEO_8514_XGA_IOTRAP:** Turn this setting off to provide faster, unrestricted video display. Turn it on if conflicts develop when you run applications in 8514 and XGA video modes.
- **VIDEO_FASTPASTE:** Turn this setting on to speed up clipboard cut-and-paste operations.
- **VIDEO_RETRACE_EMULATION:** Turn this setting on to smooth out jerky text scrolling. Turn it off to make the video refresh rate faster in some DOS applications.
- **VIDEO_ROM_EMULATION:** Turn this setting off to load additional text fonts and video card enhancements.
- **VIDEO_SWITCH_NOTIFICATION:** Turn this setting off, unless you want the screen redrawn when the system switches to or from a full-screen application display.

In general, these settings, designed to optimize games and multimedia applications, will also speed up your other programs. You can experiment with **Video_FastPaste** and the other options using the settings we just looked at. If an application behaves strangely or produces a blank screen, you can modify most DOS settings on-the-fly. Click on the control box in the

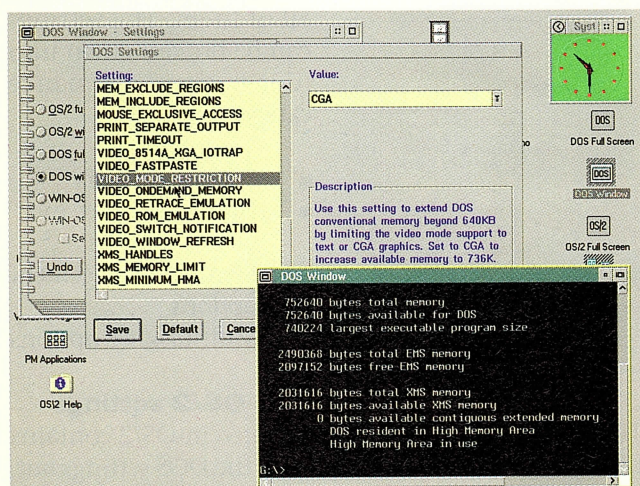


Figure 2: With **Video_Mode_Restriction** set to **CGA**, the DOS Window shown here provides 736K of Conventional memory to test-based applications. (You must also enter the statement **RMSIZE=639** in the **OS/2 config.sys**.)

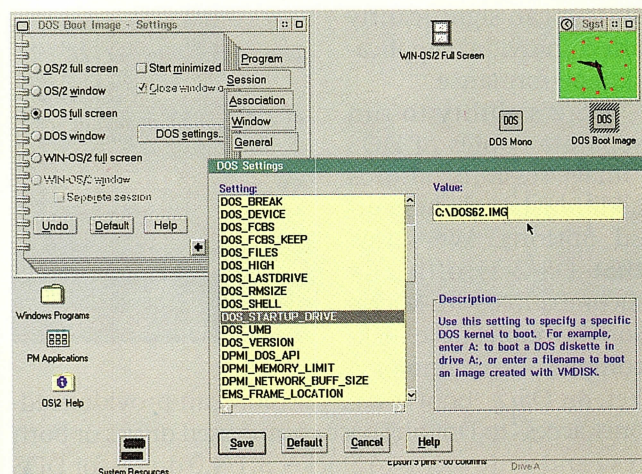


Figure 3: After producing an image file on your hard disk with **VMDISK**, enter the resulting filename in the **Value:** box as the **DOS_Startup_Drive** for your third-party Virtual DOS Machine.

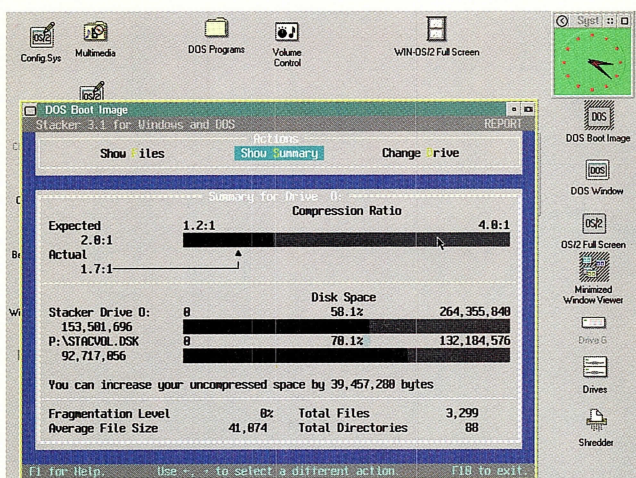


Figure 4: A third-party DOS Boot image allows you to access a Double-space or Stacker 3.1/4.0 compressed drive within OS/2. The compressed drive will only be recognized within this single session.

upper left-hand corner of the program window and choose DOS Settings. (If the application is running full-screen, first use <Alt+Home> to display it in a window.)

Here's a tip: When the **Video_Switch_Notification** setting is turned on, many applications experience trouble switching between a small-window and full-screen display. To avoid blank screens, leave this setting off. However, **Video_Switch_Notification** should be turned on to switch between programs on different monitors in a dual-display system.

Memory Management

The options in this section are similar to the *config.sys* commands associated with DOS memory management. The following are the ones you'll most commonly want to alter:

- **DOS_DEVICE**: This setting lets you pre-load device drivers for a scanner or fax board. (Generally, this option is not intended to load low-level block devices.)
- **DOS_HIGH**: Equivalent to the **DOS=HIGH** statement in *config.sys*. This option increases the amount of conventional memory available to your applications.
- **DOS_UMB**: Equivalent to the **DOS=UMB** statement in *config.sys*, this option allows TSRs to be loaded in the often-underutilized memory space located between 640K and 1MB.
- **DOS_RMSIZE**: This setting can be changed from the default setting to conserve memory and allocate less than 640K of conventional memory to a session.
- **EMS_MEMORY_LIMIT**: This setting can be changed from the default of 2,048K to allocate more

or less expanded memory to a DOS session.

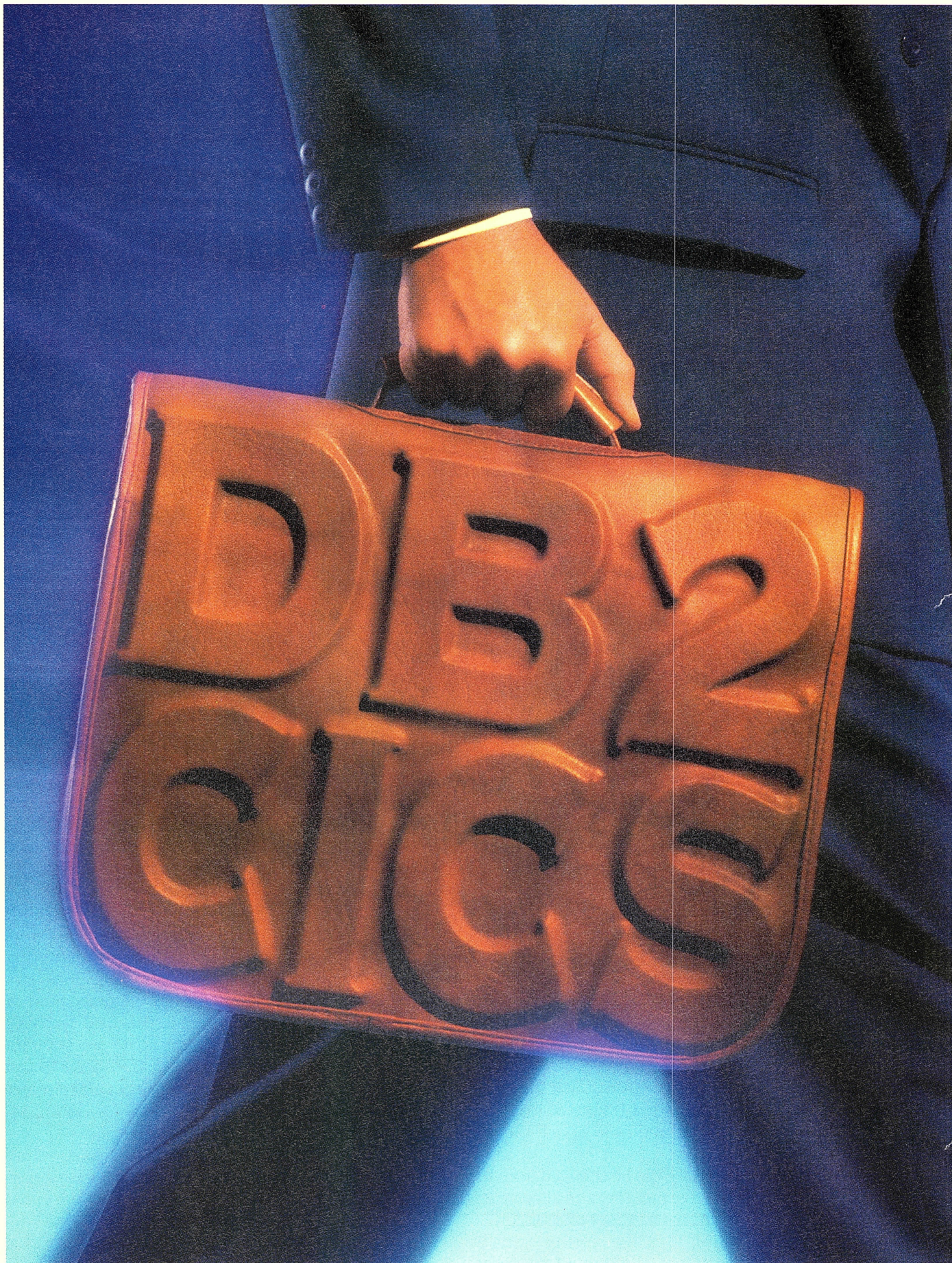
- **XMS_MEMORY_LIMIT**: This setting can be changed from the default of 2,048K to allocate more or less XMS (extended memory) to a DOS session. In general, you won't need to increase the EMS and XMS memory limits very often, since applications like Lotus 1-2-3 and Win-OS/2 seem to circumvent them, grabbing as much memory as they can. You may be able to save some memory for the OS/2 Workplace Shell or reduce read/writes to the OS/2 swap file by reducing EMS and XMS limits for ordinary DOS applications, especially those that don't use that type of memory anyway.

Another tip: The **Video_Mode_Restriction** option can be used to provide up to 736K of conventional memory to a DOS session by freeing up resources normally allocated to VGA displays. When you follow the instructions and set **Video_Mode_Restriction** to Mono or CGA, you'll be frustrated to find that it doesn't work. You still get only 640K. What IBM didn't tell you is that you need to place an additional setting into the OS/2 *config.sys*: **RMSIZE=639**. (Although there's also a **DOS_RMSIZE** option in the Session Settings notebook, it won't let you make the 639 modification stick. This parameter *must* be entered in the *config.sys*.)

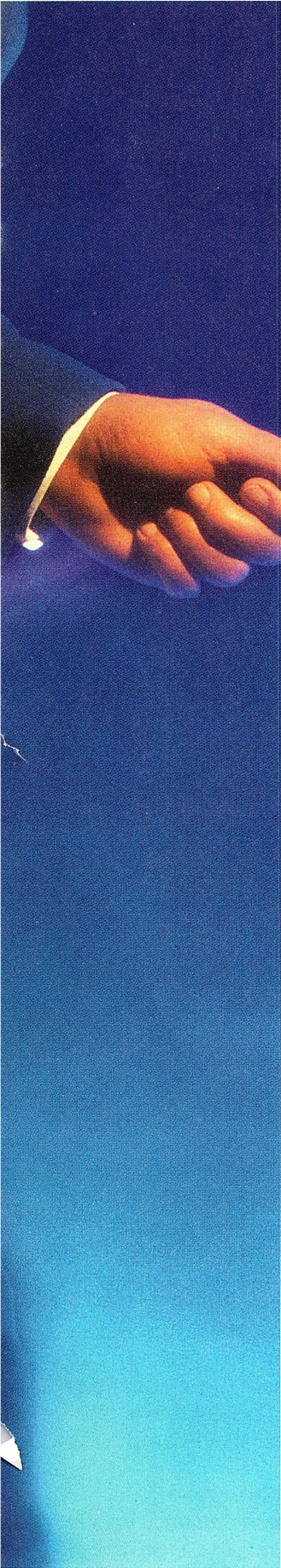
Multitasking

The following options affect the performance of DOS and Win-OS/2 sessions in relation to one another:

- **DOS_BACKGROUND_EXECUTION**: Turn this setting off for word processors, DOS utilities, and other such programs to conserve background processing time for communications programs, background spreadsheet recalculations, or non-keyboard-bound tasks.
- **IDLE_SECONDS**: Establishes a period of time (in seconds) that an application can remain idle before OS/2 steals back processor time. Increase this setting to at least 15 for background communications.
- **IDLE_SENSITIVITY**: Establishes the percentage of time that an application is active and ready to receive input. Increase this setting if your program can receive input while running, but seems to run slower than you expected. (A setting of 100 disables idle detection, and is recommended for communications programs.)
- **MOUSE_EXCLUSIVE_ACCESS**: Turn this setting on if you want to avoid seeing two mouse cursors in a DOS or Windows application. When it is on, you'll need to switch out of the application with the keyboard commands <Alt+Esc> or <Ctrl+Esc> instead of using the mouse.



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DOS Startup Options

We've already discussed some of the DOS startup options. Others, like FILES, FCBS, and LASTDRIVE work the same way in OS/2 as they do in the traditional MS-DOS or PC DOS *config.sys* file. The most important startup option is **DOS_STARTUP_DRIVE**, which can be used to boot an independent version of DOS from a floppy disk or from a "boot image" on your hard drive. These independent DOS sessions behave slightly differently from ordinary OS/2 virtual machines. They run from the operating system kernels of third-party DOS vendors—Microsoft and Digital Research/Novell. The third-party DOS kernels make it possible to run programs like IBM's DOS LAN Requester or the IBM 3353 Optical disk drive. These packages are otherwise not compatible with OS/2's "emulated" version of DOS.

Techniques for creating and using these custom Virtual DOS Machines are discussed in detail by Brian Johnson in "Building a Customized VDM," (*OS/2 Magazine*, June 1994, p. 47-49). However, we'll run through the procedure briefly here. To boot a third-party DOS session, first use OS/2's VMDISK utility to make a "boot image" of the operating system from a floppy disk. Select a bootable MS-DOS, PC DOS, or Novell DOS disk and delete or rename the *config.sys* and *autoexec.bat*. Create a simple *config.sys* on the disk that contains the following statements:

```
DEVICE=[d:]\OS2\MDOS\FSFILTER.SYS
DEVICE=[d:]\OS2\MDOS\HIMEM.SYS
DEVICE=[d:]\OS2\MDOS\EMM386.SYS
```

Be sure to use the OS/2 versions of **HIMEM** and **EMM386**, not the ones bundled with the third-party operating system! Open an OS/2 command prompt, insert the DOS boot disk in drive *a:*, and type:

```
VMDISK A: [d:]\MSDOS62.IMG
```

where [*d:*] is any FAT or HPFS hard disk partition. (You can select your own filename; I used *msdos62.img* to name the file for Microsoft's MS-DOS 6.2.) OS/2 reads the boot disk sector by sector, creating a "boot image" file on your hard drive.

Now, copy the DOS Full Screen object in your OS/2 Command Prompts folder to the desktop, or peel off a new program object from the Templates folder. Once you have your desktop object, open the **DOS_Settings** on the Session page and type the full name and path of your boot image file under the **Startup_Drive** option. When you click on this icon, it will boot a true third-party DOS session, accessing the image file on your hard drive as though it were a floppy disk.

If you need to access your physical *a:* drive in a DOS Image session, you can do it by running the FSACCESS utility found in the *\os2\mdos* directory. After the image session has been started, log onto your OS/2

boot drive and type: *fsaccess a:*.

DOS-Compressed Drives

An image-session trick lets you use DoubleSpace or Stacker compressed drives without leaving OS/2. (Stac Electronics sells an OS/2 version of Stacker that reads their 3.1 DOS and Windows compression format. But the trick described below will let you read Stacker 4.0 drives that the OS/2 Stacker product currently won't recognize.) To gain read-only access to a drive that has been compressed with Microsoft's DoubleSpace or read/write access to a Stacker 3.1/4.0 compressed drive, follow the following procedure:

- Make sure that the compressed drive is actively mounted and readable under a real MS-DOS session. (You can run MS DOS using either Boot Manager or the Dual Boot option.)
- Now, boot OS/2. After you have started your Image DOS session, copy the *dblspace.bin* file from the root directory of the bootable DOS partition on your hard drive *a:*. For Stacker 3.1 or Stacker 4.0, copy the Stac version of the *dblspace.bin* file. (When you do this in an image session, the file will be copied to the boot image, rather than to your physical *a:* drive. Therefore, don't run *fsaccess* until this operation is completed.)

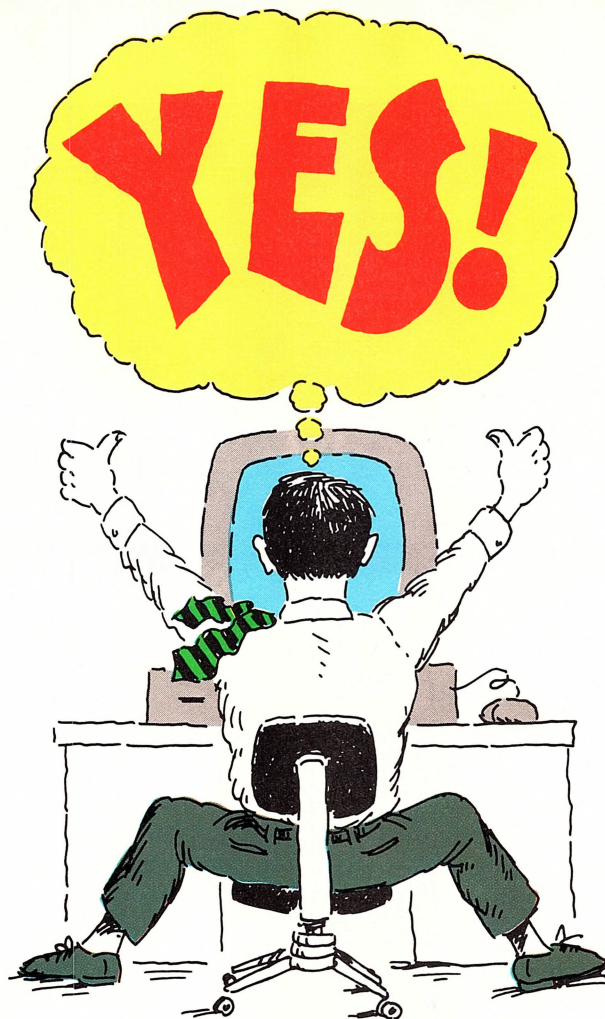
Although OS/2's Workplace Shell and ordinary "emulated" DOS sessions won't see compressed drives, your image-boot sessions will recognize them. You can even access the compressed drives in Windows applications by switching to your *\os2\mdos\win-os2* directory, and launching Win-OS/2 within the image session.

You can copy files in an image session from a DoubleSpace drive to an uncompressed drive recognized by the Workplace Shell. You can even run programs off the DoubleSpace drive, but any attempts to write to the drive will result in an **abort, retry, ignore** error message. Stacker 3.1/4.0 compressed drives seem to support all normal read/write operations.

Note that the drive letter assigned to the compressed drive may be different in an OS/2 image session from the assignment made in a real MS-DOS session. The *dblspace.ini* or *stac.ini* file found in your DOS partition's root directory can be edited to adjust the drive letter assigned to the compressed drive.

If you've worked your way through the tips in this article, you're now well on your way to becoming an OS/2 triple-operating-system expert. Congratulations on choosing a powerful operating system that is capable of meeting all of your Intel-based computing requirements.

Lenny Bailes is a writer, teacher, and consultant in the San Francisco Bay Area. He can be reached via CompuServe at 70713,562.



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The Right Tool for the Right Job

Picking a programming language for your next OS/2 project. **by Larry O'Brien**

The lack of a decent latte within walking distance from work, the decline in global frog populations, and the success of the television series *Baywatch*. These are the few things that disturb me more than the denial of programming as a fundamental skill of computer operation. Computers are always frustrating, but at least programmers know for a fact that computers do exactly what you tell them to and, when something goes wrong at the worst possible moment, it's not because of maliciousness on the part of some chip. It's because someone didn't think clearly and a bunch of other people didn't catch the problem (admittedly, this is a small comfort).

OS/2 is a great operating system for writing programs. A flat, 32-bit programming model, crash protection, multitasking, a standard object model—I don't know whether these things make the average business user's eyes light up, but each of them appeals to programmers. Indeed, programmers were early adopters of OS/2 and are among its most vocal proponents.

Many OS/2 users work in software-development divisions of their company, which makes sense to me. It may be difficult for shrinkwrapped OS/2 applications to compete for shelf space at Egghead but, for companies willing to choose an operating system on the basis of merit and not market share, OS/2 is more than competitive.

Where to start

So, you've chosen OS/2 as a great operating system and you want to choose a programming language. How do you start? The first thing to realize is that what you are choosing is not really just a language, but a programming system, including a set of function libraries, a debugger, a visual programming tool, and an editor. You've got to look at the interplay of all of those tools

working together before choosing. Some languages have great visual design tools but the debuggers are lousy or the underlying language is kludgy, while others have great debuggers but little else. Some languages (notably C++), allow you to change any or all of these tools, but it's becoming increasingly less common to modify the toolset that comes in the C++ box. These choices are subjective; I prefer the wealth of information provided by the low-level debugging characteristic of C++, while others see the uncluttered interactive trace facilities of REXX as superior.

The second thing to realize is that your time investment will far outstrip the cost of whatever system you choose. Learning a language takes very little time, but learning its libraries takes weeks or months, and mastering the interplay of these libraries with OS/2 is ever elusive in today's world of 18-month product cycles. Unfortunately, it's a sad fact that people often choose products based on how good a demo looks or their experience in the initial four hours of product use. This short-term viewpoint has propelled the explosive growth of some of today's most successful language products, particularly on the Windows platform.

Facts about programming

Another thing to understand is that no matter what language you use, you'll write about the same number of lines of code per day. That number, the base coding rate, varies by an order of magnitude even among professional programmers, but numerous studies show that it's fairly constant for any one person. Other important factors influencing the overall coding rate are whether you're working as part of a programming team and the complexity of the problem.

Your real challenge is to find the language that will solve the problem using the fewest lines of code. The

problem is knowing in advance how many lines of code any given problem will require. Demoware tools always show applications that use a handful of code (if any), but almost always require *many* lines of code to extend their included functionality. Ultimately, some problems can only be solved by brute force, requiring fast, low-level access to the CPU, which is one of the motivations for using C++. It's like climbing stairs instead of taking an elevator—it's probably more work, but you don't have to worry about getting stuck. (You can even extend the metaphor a bit—if you have no reason to believe the elevator's going to get stuck, and you have no other reason to choose the stairs, you're just being paranoid if you don't take the easy way up.)

Open vs. proprietary languages

Many languages, from Ada to Z, are designed to solve one or more classes of problems in the fewest lines of code. The majority of these languages are proprietary to a vendor. I tend to shy away from these for a few reasons. First, there's a Catch-22 when it comes to vendors of proprietary languages: either the language is their major product, in which case they are certainly a small company with a (most likely) uncertain future, or the language is a minor product, in which case it may be abandoned or held hostage to the company's other strategic products. Second, market competition forces open languages to evolve much more rapidly than proprietary languages. While the market is forcing C++ vendors into a product cycle of less than a year, vendors will squeeze what they can out of a major release of a proprietary system and only upgrade when sales are clearly tapering out. Finally, open languages generally come from once-proprietary systems that were used successfully for a long period and, therefore, have

had their rough edges removed.

Some compelling reasons may lead you in the direction of a proprietary language. I keep Wolfram Research's Mathematica computer-algebra tool handy for situations that require statistics or, especially, three-dimensional graphing. (I'm anxiously hoping to see a native OS/2 version of Mathematica sometime soon.) Think of yourself as a carpenter—the most important thing is to have the best basic tools possible, but if you have an exotic joiner, use it at the right time.

Performance

People make a big deal about performance, but there's only one performance issue that matters: too slow. "Too slow" can manifest itself in two ways: too slow to use and too slow to develop. People should stop being quite so obsessed by the former and be a little more concerned with the latter. Slow performance generally comes from attempting complex graphics, network messaging, and database operations, not from the CPU overhead of interpreted or semi-compiled object code.

A few years ago, I worked in an office that used a utility written in a language that was semi-compiled (that is, the language is compiled to run on a virtual machine and then linked with another program that emulates that virtual machine). The utility was slow and, when I rewrote it in C++, my program ran more than an order of magnitude faster. The performance increase came almost entirely from an algorithmic improvement, not from the use of C++. The writer of the original utility always pointed out that the difference was that he wrote his in an afternoon, while mine took six months! (Actually, I put off the job for five months and 29 days—I wrote the program in something less than a full working day.) Still, it doesn't matter for what reason a program *isn't* writ-

ten—a program that's running and marginal is infinitely better than a program in someone's mind that runs like the wind.

3GLs, 4GLs, 5GLs?

You've seen ads that display proprietary fourth-generation languages (4GLs) and talk about how much more productive they are than third-generation languages like C or Pascal. The ads usually talk about writing applications without coding. This claim is almost always wildly misleading and often a downright lie. The whole concept of language "generations" is a product of the mid 1970s, and is based on the idea of a natural progression from machine code (first generation) to macro-based assembly language (second generation) to procedural code (third generation) to database triggers (fourth generation) to artificial intelligence (fifth generation). I can think of many reasons why you shouldn't be making your programming system choice based on a 20-year-old academic paper.

First, this hierarchy ignores the very important issue of object orientation, which we'll be getting to shortly. Second, it's based on a world of mainframe and minicomputers, not a world of desktop microcomputers and graphical user interfaces. Third, many of the products billing themselves as 4GLs don't even meet the criteria laid out in the 1970s. Finally, all 4GLs are proprietary systems with the inherent disadvantages mentioned previously.

Today, when a product claims to be a 4GL, all it probably means is that it is a proprietary language that can read and write to a database. Admittedly, virtually all programs need to use a database and, back in the 1970s, this meant writing extra code, but today, libraries are available that will link whatever language you choose to whatever database you happen to have running.

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Some databases, such as DB/2, even have built-in support for programming languages such as REXX, and most languages allow for embedded SQL statements.

If you're only interested in writing form-centered or report-centered business applications, you may be best served by a 4GL but, in general, you'll want to stick to an open language (and forget about assigning it a generation).

Object orientation

You may have thought that "object orientation" was last year's buzz phrase, supplanted in 1994 by "client/server," but the popularity of objects is the most important trend in computer science since the popularization of structured methods in the 1970s. Simply put, an object is a set of data and the functions that are applicable to that data. An "orientation" toward objects simply means that pro-

grammers should concentrate on creating logically complete objects rather than concentrating on the steps necessary to solve a particular problem. As you start to build a library of logically complete objects, you're able to create applications by snapping these objects together. For example, if you have a logically complete **Listbox** object, a logically complete **Person** object, and a logically complete **List** object, you should be able to create a new **Person**, insert it into the **List**, tell the **List** to sort itself, and tell the **Listbox** to display the list.

This approach is really an enormously superior way to program. Although reusing your own objects is the Holy Grail of objects, "just" reusing standard interface elements and data structures can relieve you of more than half of the coding effort in a standard application.

Another way to reduce coding effort is to use visual programming

tools. These tools generally have a palette of interface objects, such as entry fields, listboxes, windows, and buttons, and allow you to "paint" the interface by dragging and dropping the various elements where you need them. Then, you call up a list of the actions that might apply to that element and add the code. Hmm...objects, actions that apply, sounds a lot like what we were just calling object-orientation, right? Close, but no cigar. True object-oriented languages allow you to specialize types by inheriting all the data and functions of a type and changing only the behavior that interests you. Many languages that feature visual programming tools don't have such an ability.

Now that we've talked about the generalities of choosing a programming language, let's take a look at three specific languages that I favor for working in OS/2.

REXX

Every user of OS/2 should have at least a passing familiarity with REXX, whether they are a programmer or not. REXX is the language used in *.cmd* command programming files, the equivalent of the DOS batch (*.bat*) files. In addition, REXX is used as the macro language of many OS/2 programs such as the OS/2 Enhanced Editor.

REXX is a procedural language designed for ease of use. According to the primary author of the language, Mike Cowlishaw, REXX is best used for personal programming, tailoring user commands, macros, and prototype development. Under OS/2, all of these abilities are aided by a competitive assortment of visual programming environments. As far as I know, all REXXs are interpreted.

REXX has a syntax that is, if anything, too flexible. It uses implied semicolons to indicate finished statements, optional parameters for most of the built-in functions,

What about BASIC?

Many of you are undoubtedly familiar with BASIC and may be disappointed that I do not include it as one of the primary languages to consider for programming in OS/2. BASIC is included with OS/2 (QBASIC, which is a DOS program), Visual BASIC is a sensation in Windows, and CA-Realizer from Computer Associates offers Windows compatibility. Ah, but that last sentence reveals the problem: BASIC is not even close to a standard language. There's more disparity between different dialects of BASIC than there is between some of those dialects and Pascal!

BASIC is a hot topic right now, primarily because of Microsoft's Visual BASIC for Windows. Visual BASIC is hot because of an enormously successful aftermarket in Visual BASIC Controls (VBXs). The problem with VBXs is that they are tightly tied not just to Windows, but specifically to Windows 3.1. Microsoft is now sweating bullets over the acceptance of a new type of control called an OCX, which is compatible with Win32 (the basic API of Windows NT and Chicago). OCXs are based on Microsoft's Object Linking and Embedding (OLE) technology, which will be combined with Digital Equipment Corp.'s Common Object Model in an attempt to make something competitive to IBM's DSOM object model.

In other words, VBX controls were a hack (in the best sense of the word) and provided a glimpse of the coming world of object-oriented operating systems. The important thing to keep in mind, though, is that SOM and DSOM are here now (they're just not being taken advantage of) while Microsoft's underlying technology is still evolving. It's yet another area where OS/2 has a technological advantage that IBM seems to want to keep a deep, dark secret.

Ah, but I seem to have wandered off on a tangent and I wasn't about to say anything that isn't said daily by any OS/2 user anyway, right? To get back to BASICs, my advice to anyone who is familiar and comfortable with BASIC is to consider REXX, which would be picked up quickly by any BASIC user. Or, you could ignore my general advice on proprietary languages and go with a product like CA-Realizer.

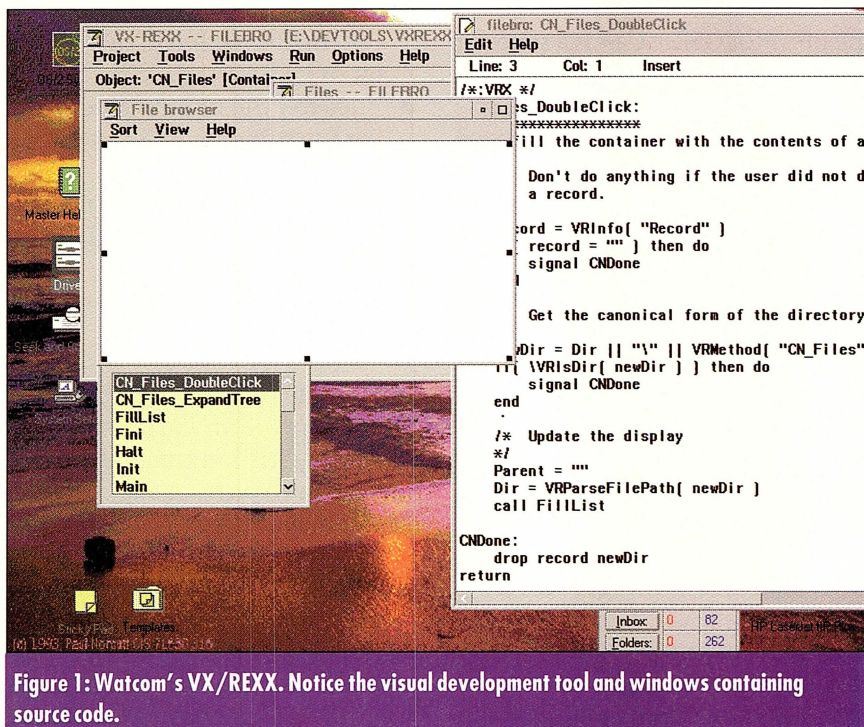


Figure 1: Watcom's VX/REXX. Notice the visual development tool and windows containing source code.

built-in functions that expose or hide variables modified by a function, and on-the-fly interpretation of REXX statements. I'm aware of companies that have hundreds of thousands of lines of REXX code in production applications, but I

wouldn't want to be the maintenance programmer at one of them! All that flexibility leads to programmers (and programs) with radically different styles.

REXX's syntax is especially good for string manipulation and con-

verting data from one type to another. The parsing ability of the language is especially powerful. Another nice feature is arbitrary precision arithmetic.

REXX has a large amount of built-in functions, which are supplemented with good function libraries from the vendors. REXX has a traditional emphasis on operating system support, so it's simple to call external programs and modify the environment.

Figure 1 shows Watcom's VX/REXX, one of several visual REXX tools on the market. You can see the visual development tool, and some windows with source code.

Smalltalk

Smalltalk is the premier object-oriented language. Everything in the language (even the development environment) is an object. This purity allows for a simple language and an incredibly rich set of predefined objects. Programming in Smalltalk is based on the concept of browsers—windows whose upper-left pane is a listbox, and whose other panes either reveal details about what's chosen in the upper-left pane or are further listboxes to hierarchically break down the object under scrutiny even more. This powerful windowing metaphor allows you to move through the thousands and thousands of predefined functions (called messages in Smalltalk) provided with the system.

To create an application in Smalltalk, you combine predefined objects, such as windows and menus, with your own problem-specific object in one big **Application** object. You can then seal this **Application** object off as its own executable. The Smalltalk environment shown in Figure 2, Digitalk's Smalltalk/V supplemented with Team/V, is an incremental compiler—every time you change a function it quickly compiles it.

Despite attention from the ven-

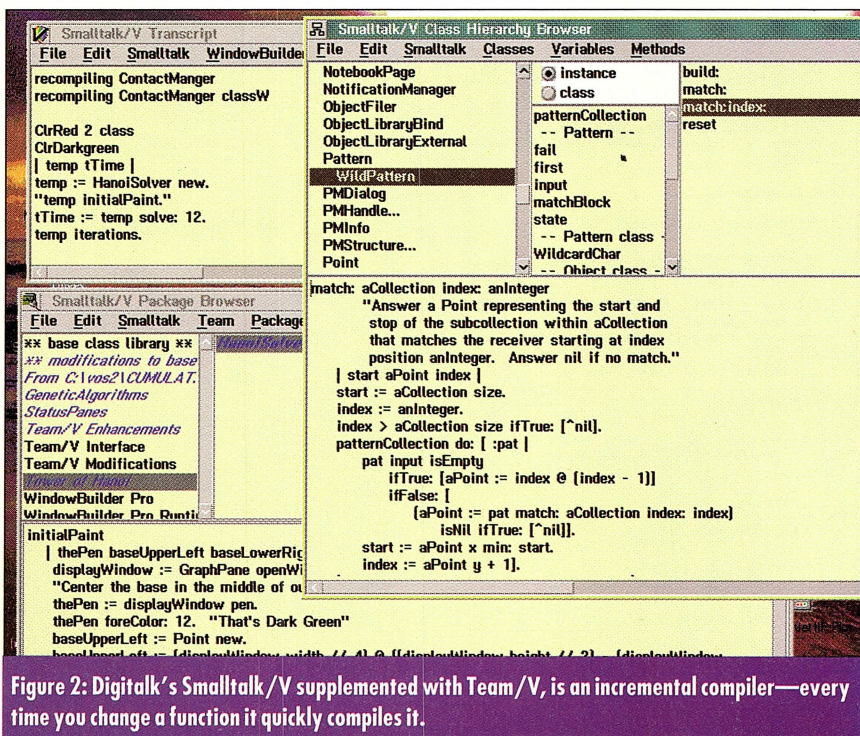


Figure 2: Digitalk's Smalltalk/V supplemented with Team/V, is an incremental compiler—every time you change a function it quickly compiles it.

dors and increasing hardware power, Smalltalk's performance can be frustrating. OS/2 is an ideal environment for Smalltalk programming, and if you're running a quick 486 or better with 8MB of RAM or more, you shouldn't have any problems unless you're doing some intense number crunching (even numbers are objects in Smalltalk, so an instruction that could be done in a single assembly language statement, such as adding two integers, still involves overhead).

Smalltalk began at Xerox PARC, the research center that gave us mice, windows, bitmapped graphics, laser printers, and so forth, and was originally intended as a language that could be taught to children. Perhaps because of this relatively pure heritage, it's sometimes frustrating for a person with computer experience to find and use functions that are common in the real world (directory services, for example).

Smalltalk is a language that breeds fanaticism. No development system is more productive for non-trivial programs. The language is elegant and the class library exhaustive. These benefits make the initial learning curve all the more frustrating; it's tempting to abandon the language before ever opening a window of your own design. Once you get the language's philosophy, you'll probably never turn back, but the relative expense of visual programming tools and the dearth of good beginner books makes this initial effort one of faith.

C++

Although it's fashionable to criticize C++ and it's ever-increasing complexity (C++ is now a language designed by committee and has surpassed Ada in complexity), I honestly like the language. C++ is an object-oriented language that's traditionally compiled (although incremental compilers are available on UNIX and are rumored to be

heading for OS/2). C++ is a superset of C, a non-object-oriented language, and is designed to emphasize performance. This hybrid heritage makes for a language that appeals to the anarchistic spirit in all of us.

C++'s most appealing feature is its terseness. Doing three or four assignments or function calls in a single line is the natural way. To give you an idea:

```
for(int j = 1; j < foo((void*)
j); j+=bar(j));
```

This line of code:

- Declares an integer variable named **j**
- Initializes **j** to the value 1
- Begins a loop
- Calls a function named **foo** with a parameter interpreted as the memory address specified by the contents of **j**
- Ends the loop if the function **foo** returns a value greater than or equal to **j**
- If the loop hasn't ended, calls

the function bar with a parameter of **j**

- Adds to **j** the return value of the bar function

This line of code would be considered straightforward. To give you another example:

```
while(*s++ = *t++);
```

is the code for copying a string of characters (or any array, for that matter). This language does not force you to write readable code. Remember the base coding rate discussed earlier—you want to do as much as possible on every line of code and C++ is a good way to achieve that goal.

Except for the libraries. In some ways, C++ is the natural language of OS/2. Ultimately, all OS/2 capabilities are sets of C function calls. By calling them yourself, you should be able to achieve high performance. Here's where the base coding rate bites you, though—virtually every OS/2 capability

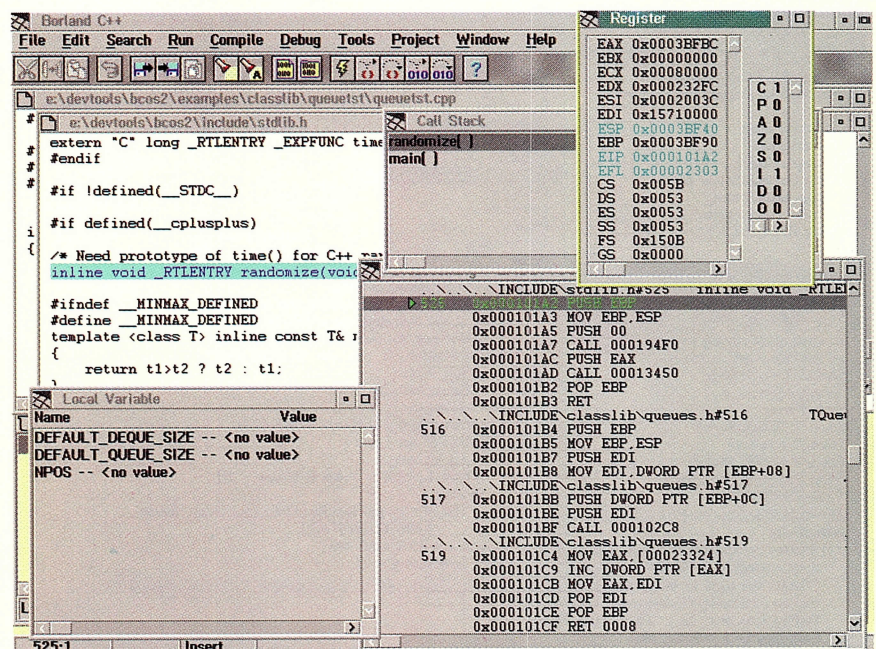


Figure 3: Borland C++ 1.5. Borland's development system compiles quickly and has a nice development environment.

requires you to call several functions and write several lines of code (simplified, you typically have to get a resource, do your operations, and then release it, each of which is a separate function call). A program that does nothing but display a window with the words "Hello, World!" in it requires over a hundred lines of code, virtually all of which are OS/2 function calls.

C++'s standard libraries are based on the teletype era, so they don't help at all with OS/2. To program OS/2, you need to use two things: visual programming tools and a class library. A visual programming tool for C++ generates hundreds of lines of source code in a matter of minutes—either directly for OS/2 or for a class library. A class library encapsulates those sets of OS/2 function calls for you, so you only call one function and a whole string of OS/2 calls are done

in the background.

Another advantage of class libraries is that they often provide seamless portability to other operating systems such as Windows, UNIX, Macintosh, and DOS.

You have several choices when it comes to C++ compilers for OS/2. Figure 3 shows Borland C++ 1.5. Borland's development system compiles quickly and has a nice environment, although the cross-platform version of the Borland class library was not shipping at the time of writing (all third-party class libraries support Borland).

Which Language To Speak?

If you're going to learn just one language, learn REXX. Every advanced user of OS/2 should have some familiarity with this language. You can learn with the version provided with OS/2 and move to one of the commercial programs when

you're ready to write windowing applications. It's a language that is quick-to-learn, flexible, and easy to program in and debug.

Smalltalk and C++ are really for those who are interested in moving to a professional level of programming. Smalltalk is a pure object-oriented language with a great development environment and, if you're willing to spend the time and money needed to learn it, you'll never regret it. C++ is a very high-profile language, but unless you're writing shrinkwrapped software, it's probably not the right choice. If you are going to use C++, use a visual programming tool and a class library to help you.

Larry O'Brien is the Editor of Software Development magazine and the author of the forthcoming book Exploring Artificial Life in C++ (M&T Books).

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Balancing the Books

If you use Computer Associates' Simply Accounting, your accountant is going to love you. **by Esther Schindler**

The question is... do you really want the ardor of an accountant? Computer Associates' Simply Accounting for OS/2 is an entry-level single-user accounting program for small businesses. As with most of CA's recent products, both the OS/2 version and the Windows version are included in the same box.

It's accounting, all right...

I'm not an accounting expert. I'm more interested in working with my clients (most of whom run small businesses, like my own) to help them get their work done. Accounting bores me to tears, and over the years, I have learned as little about the subject as I could get away with and keep my own small business going. I leave the serious accounting to my CPA.

The DOS-based accounting package I chose several years ago was extremely flexible, but it was not double-entry based, or at least not in the standard fashion. So my tenuous grasp of accounting terminology and practices is almost embarrassing.

Simply Accounting is very thoroughly rooted in double-entry accounting, and it expects you to understand

the difference between a debit and a credit. For those of us who don't understand basic accounting, the package includes an introductory text on the subject. The key word is introductory—you won't be tempted to take the CPA exam when you're done reading it.

Simply Accounting includes modules to help you manage your general ledger, payables, receivables, payroll, and inventory, and it provides a rudimentary project tracking system. For example, vendor and customer records are kept in ledgers (payables and receivables, respectively); transactions are entered in journals.

...But is it simple?

Before you can start entering daily transactions, you need to set up the charts of accounts and enter enough information so that the records begin with up-to-date information. I spent a day organizing the accounting books for the fictitious Tasteful Chocolate Company, a

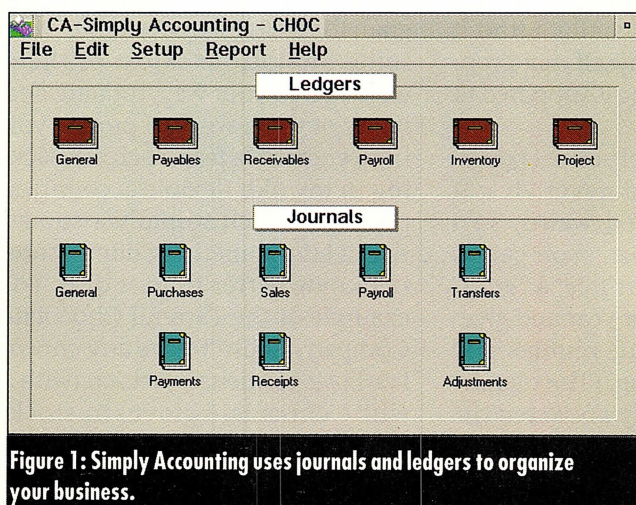


Figure 1: Simply Accounting uses journals and ledgers to organize your business.

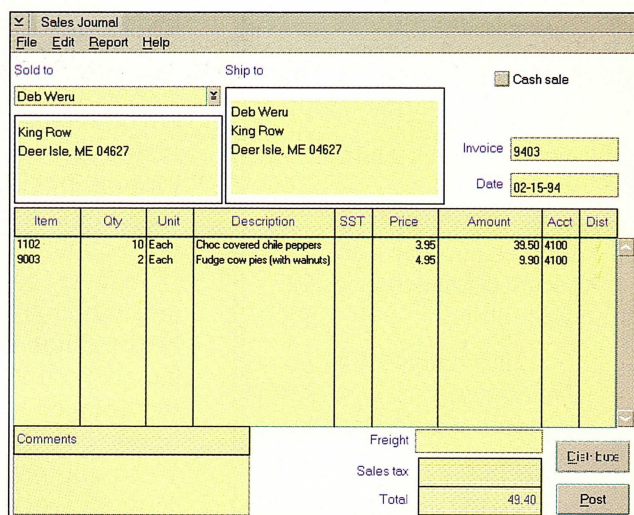
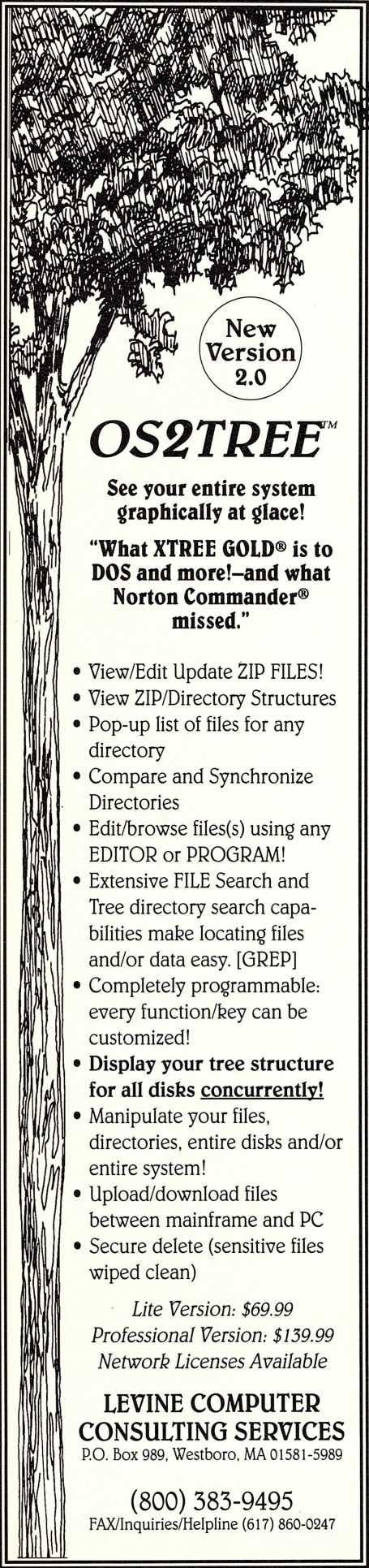


Figure 2: The Invoices you create look like invoices. When you enter inventory account numbers, Simply Accounting will fill in the description and price.



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retail gourmet chocolate store. Simply Accounting provides six skeleton companies (including retail, service, and construction firms), so that you don't have to create a chart of accounts from scratch. You can add and modify the accounts they supply, though account numbers must be assigned in a very structured fashion. Asset accounts, for example, must be assigned numbers between 1,000-1,999.

The process of getting the books ready was very well managed. The Getting Started manual explained what I needed to do at every step.

Almost everything seemed very sensible and obvious—until I tried to actually do something. I'm sure that most of my problems were due to my inexperience using a true double-entry system than with Simply Accounting, but if your accounting experience is as limited as mine, you might encounter the same frustrations. It took me half an hour to figure out how to pay the phone bill for the Tasteful Chocolate Company. When I typed in a purchase order for 150 chocolate pizzas instead of the intended 15, I couldn't simply edit the purchase order to change the quantity after the transaction was posted. I had to make journal entries to back out the original order, then type in a new one. That's strict double-entry accounting, the sort that makes accountants smile. I find it irksome, but I tell myself that properly done accounting is supposed to be irksome.

As far as I could tell, once I posted an invoice, I could never view it again. That seemed weird, so I called Tech Support. (You get 30 days of tech support free; a "gold" option costs \$75 per year and gives you a toll-free phone number and 12 months of support.) The friendly voice that promptly answered the telephone confirmed my perception. Once you post an invoice or purchase order, you can no longer

view it or print it. The detail information isn't kept; if a customer calls to ask about the line items on a \$3,000 invoice, the only record you have is an invoice number.

The program is very rigid. It trains you to do things right the first time, because your penance for doing otherwise is to re-enter your information. Once you get the hang of entering transactions, though, working with the program is straightforward. You add customers to the Accounts Receivable ledger, and post invoices and payments to the Sales and Receipts journals. The transactions you enter automatically update the other reports through integration accounts. By their nature, accounting programs are intended to be easy to use, not necessarily easy to learn; I suspect that Simply Accounting qualifies for the former category, if not the latter. However, I would have very much appreciated more "how-to" tips for common transactions than were included in the Workshop manual or the User's manual. In addition to the basic lessons on accounting practices, I would like to see a few chapters that described how to pay that darn phone bill, how to reconcile the checkbook, and how to include a description when you purchase something that isn't an inventory item (such as legal services).

As you might expect from a program that sells for under \$100, it has some limitations. Most of them won't get in your way, though, and many of them work to protect you from yourself (a feature grossly lacking in my old, flexible accounting package, which stupidly assumed that if I did something dumb, surely I knew better than it did). For example, if the Tasteful Chocolate Company doesn't have any chocolate busts of Michael Jackson (with a white chocolate glove) in stock, Simply Accounting won't permit any to be sold. It won't just warn you that you're out of stock, and

then let you override the inventory warning; it won't let you enter the order. Back in the days when I sold computers, I would often sell a system, promising delivery next week, and then order any parts I didn't have in stock. From an accounting point of view, Simply Accounting might be acting properly; if I had a customer on the phone, placing an order, it would have driven me nuts.

The program includes a full complement of reports, including several that are specific to each module. The reports are clear and useful, and I have no complaints. The period reporting lets you generate the quarterly and yearly information you need. That's good, because you can't customize the reports. You can choose which font to use for each report, and you can include the company name and address, but you can't change the layout. You will want to use pre-printed forms, as Simply Accounting doesn't print any line-draw characters and the plain-paper forms look skimpy. (I fax invoices directly from OS/2, so this is a mildly annoying nit.)

...And is it OS/2?

Installation is straightforward. The program, which takes about 2MB of hard disk space even with every option selected, will install to any directory you name. The conversion program (which you can install if you used an earlier version of Simply Accounting for Windows or Bedford Accounting for DOS) is a Windows application.

Simply Accounting uses graphics well; it's pretty. Invoices look like invoices; payment ledgers use data-entry screens that look like checks. Nor does the prettiness get in the way. It's easy to enter data, and when you don't know an account number, pressing <Enter> will display a list of the items from which you can choose.

Simply Accounting's Workplace

Shell integration is weak. It is aware of OS/2, but it doesn't exploit the environment in any way. You can open several ledgers and journals at once, but printing (which doesn't seem to be on a separate thread) nearly brought the other applications on a 33MHz 386 (with 16MB RAM) to a halt. File names are still limited to the DOS 8.3 conventions (though, in practice, the only file

name you're likely to care about is the company books' file name, and a name like *choc* should be unique enough to identify your own company). DDE is supported in the Windows version, but not under OS/2.

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Review

Accounting just because it's a native OS/2 application. Its OS/2 support is acceptable but underwhelming. If Simply Accounting suits your needs, you will be happy that it's an OS/2 application. However, there are no OS/2-specific features that will compel you to purchase this package over another one if the base product's features aren't a good match for your business.

Simply Accounting provides a lot of structure to your accounting, and it requires more than a passing knowledge of accounting terms. If you are comfortable with accounting terminology (or willing to become so), this program may be an excellent choice for your small business. You'll certainly have

an easier time of it than I did. On the other hand, if you have established a financial structure for your business

that doesn't match the one that Simply Accounting provides, stay away. If you don't want to work by its rules, you won't be able to get it to work at all.

Esther Schindler is a computer consultant and writer. She is a contributing editor to OS/2 Magazine, sysop of the ZiffNet Executives On-Line forum on CompuServe, and author of The New Riders Guide to Modems, from New Riders Publishing. You can reach her on CompuServe at 72241,1417.

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READER SERVICE NO. 175

Invoice	Original Amt.	Amt. Owing	Payment Amt.
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Figure 3: Simply Accounting offers a straightforward way to enter payments into the accounting ledger.

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**Late-Breaking
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New scanner software for OS/2

Solution Technology announces the release of their image utility, Applause, that can view and print images in the following formats: TIFF (uncompressed, modified Huffman, pack bits, G3, G4), PCX, DCX, OS/2 bitmaps, Windows bitmaps, GIF, and IBM PSEG-3820. Applause also views fax files received by FAXIT for Windows, WINFAX Pro Fax, and QuickLinks II. Image manipulation options include rotate, invert, fit-to-width, color-depth conversion, color-brightness modification, and resolution conversion. Applause uses TWAIN-compliant scanner drivers for input from Logitech Scanman 256 and Hewlett Packard IIp or IIc series scanners. Applause sells for \$149 for the Logitech version and \$199 for the Hewlett Packard version. Call Solution Technologies at (407) 241-3210 or fax (407) 997-6518.

READER SERVICE NO. 176



IPF Editor 1.01

Get help for making help files

Perez Computing Consulting announces the release of IPF Editor, a program that helps create the IPF files OS/2 uses for on-line help files and information distribution. It includes a user's guide that explains the IPF file creation process from start to finish and has import filters for WordPerfect, Lotus 123, and Excel data files. The point-and-click interface allows IPF files to be created and previewed, but a C or C++ compiler is required to compile the final IPF file. An optional Voice Support Module for creating IPF files includes music and speech playback. IPF Editor sells for \$125, or \$95 without the printed manual.

Call Perez Computing Services at (206) 428-5025.

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World-Class Fonts

Add more faces to your words

Fantazia Concepts is releasing World Class Fonts, a collection of more than 6,000 fonts that include 2,500 TrueType, 2,500 Adobe Type One (including the OS/2 version of Type One), and 1,000 Geoworks fonts. The TrueType fonts on the CD-ROM match the ones in Type One format. Fantazia Concepts guarantees that no fonts will be duplicated on the CD-ROM and

that all fonts were originally created by Fantazia Concepts. The CD-ROM sells for \$89.99, but will be available, for a limited time, for \$49.99. Contact Fantazia Concepts at (800) 951-0877, (216) 951-5666 or fax (216) 951-9241.

READER SERVICE NO. 178

Kopy Kat 1.0

The next best thing to being there

Hilgraeve Inc. is releasing Kopy Kat, a utility for controlling OS/2 remotely, via LAN, modem, or serial port. This program supports remote control for DOS, Win-OS/2, and OS/2 programs in full-screen sessions or Windows on the Desktop. Kopy Kat supports 250 modems and communications devices, as well as NET-BIOS and IPX protocols. This program uses the same Modular Communication Engine as their other communication programs. Kopy Kat sells for \$199. Call Hilgraeve at (313) 243-0576 or fax (313) 243-0645.

READER SERVICE NO. 179

Wipeout 1.2

Full-screen savings

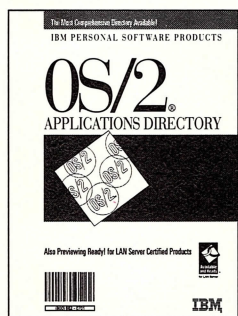
BocaSoft released the latest update to their OS/2 screen saver, Wipeout. Version 1.2 monitors full-screen sessions for keyboard and mouse activity and will switch the screen saver on—even in full-screen OS/2, Win-OS/2 and DOS sessions. It features enhanced pass-

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VisPro/REXX Data Entry Object Pack

Roll your own data entry program

HockWare is releasing an add-on pack to VisPro/REXX designed to help create data entry programs. The Data Entry Object Pack includes five objects that can be added to the objects that come with VisPro/REXX. The five objects include a formatted entry object, spreadsheet object, split-bar object, clock object, and calendar object. The Data Entry Object Pack requires VisPro/REXX Bronze or Gold (version 2 or higher) and sells for \$119. Contact HockWare at (919) 380-0616 or fax (919) 380-0757.

READER SERVICE NO. 181

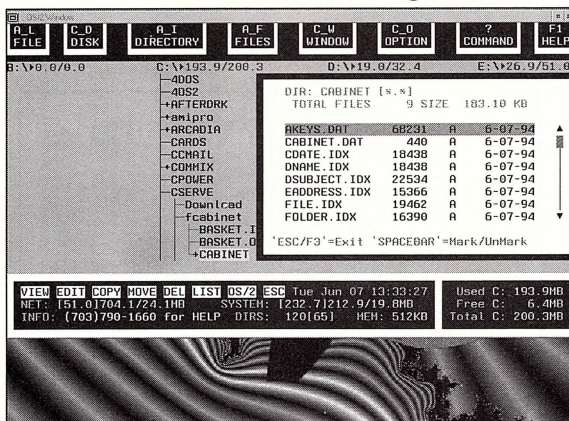
GammaTech REXX SuperSet/2 1.0

Get more out of REXX, without an obedience school

GammaTech is releasing a REXX library of new functions for OS/2's REXX interpreter. The new functions in the Dynamic Link Library (DLL) extend the functionality of all programs that use OS/2 REXX functions, such as all

OS/2 Tree 2.0

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which does not. OS/2 Tree has added an improved user interface, support for multiple archive programs, zip-tree display support, and dual-directory listings. OS/2 Tree PRO sells for \$149 and OS/2 Tree LTE sells for \$79. Call or fax Levine Consulting at (800) 383-9495 or (508) 873-3344.

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visual REXX programming packages. The new extension sets are focused on networking, but other additions, such as VIO Interface, semaphore, macrospace manipulation, and process functions are included. SuperSet/2 sells for \$79.95. Call SofTouch Systems, Workstation Division at (405) 947-8080 or fax them at (405) 632-6537.

READER SERVICE NO. 183

BMDP/Diamond 1.0

See what those numbers look like

BMDP Statistical Software Inc. has started shipping BMDP/

Levine Consulting is releasing the 32-bit update to their OS/2 file-management utility, OS/2 Tree. This character-mode application includes mouse support and comes in two versions: OS/2 Tree PRO, which includes network and mainframe connectivity options and OS/2 Tree LTE,

Diamond 1.0 for OS/2. This program can be used to visualize statistical data and make it easier to comprehend trends in multivariate data. BMDP/Diamond shows data in multiple graphic views that include multidimensional plots, sorted tables, three-dimensional scatterplots, parallel coordinate plots, parametric snake plots, and general global data view. All data can be manipulated by keystroke or mouse and if data is manipulated graphically, the corresponding statistical data changes as well. The package also includes a multidimensional program called Ice. BMDP/Diamond 1.0 sells for \$695. Call BMDP at (800) 238-2637 or (310) 479-7799.

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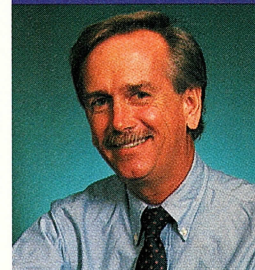
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Need Help? Here's Where to Go

THE HITCHHIKER'S GUIDE TO IBM'S OS/2 TECH SUPPORT BY DICK CONKLIN



This month, we'll look at OS/2 support. More sources of help exist than you probably realized. In fact, every topic we've discussed in this column since the beginning (books, user groups, BBSs, on-line services, CD-ROMs, and education) can be considered a form of support. But IBM, the creator and maintainer of OS/2, is arguably the best source.

Before you call

Most support groups, inside IBM and elsewhere, will remind you that many alternatives to telephone support exist. They'll suggest you read the book first and check the on-line sources of help before you call them. This is always a good practice, whether warranty (free) or fee-support services are being used. Remember, the clock counting your 60 days of free warranty support doesn't start until you make your first call, so you may want to delay starting your free support period until you really need it.

Read the book

Using the Operating System, the book that comes with OS/2, is a good place to begin. Your product registration number is inside the front cover, which you'll need before you call IBM Support. Part 5, "Extra Help," contains six chapters that are worth looking at: "Solving Problems," "Performance," "Software Support," "Video Support," "Printer Support," and "Hardware Support."

Table 1: Where to Get OS/2 Support

SUPPORT SERVICE:	OS/2 Getting Started.
SPONSOR:	IBM Personal Software Solution Center.
INTENDED FOR:	New OS/2 users who have encountered problems while installing, setting up, and operating OS/2 or while setting up printers and displays, partitioning disk drives, running multiple operating systems (dual boot), migrating applications to folders or the desktop, or installing and using Multimedia.
FORMAT:	Free voice call; discuss the problem with an analyst, receive guidance, and register new problems.
AVAILABILITY:	Free warranty support starts with your first call and lasts for 60 days; call Monday through Friday between 8 a.m. and 5 p.m. in your local time zone.
PREREQUISITES:	See "Before you call" in this article and other support listings in this table, such as OS/2 Quick Help. Have your OS/2 registration number ready (see the inside front cover of <i>Using the Operating System</i> , the book that comes with OS/2 2.1).
HOW TO ACCESS:	Call (800) 992-4777; from a touch-tone phone, select "1" (for software problems), and "4" (to speak with a Software Solutions Technical Analyst).
CONTACT:	See the inside front cover of <i>Using the Operating System</i> .
SUPPORT SERVICE:	OS/2 Program Services
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INTENDED FOR:	All OS/2 users reporting bugs in OS/2.
FORMAT:	Customers can report code-related problems to IBM electronically, via facsimile, or through U.S. mail. IBM will respond in the same media as the customer inquiry within two business days of electronic or facsimile receipt and within seven days of mail receipt; responses describe the disposition of each problem; code-related responses may include a code correction, bypass, or restriction.
AVAILABILITY:	Life of the product.
PREREQUISITES:	See "Before you call" in this article. A defect-reporting form is available in <i>problm.txt</i> on CompuServe and Prodigy.

Table 1: Where to Get OS/2 Support (cont'd)

HOW TO ACCESS:	For addresses and phone numbers, call (800) 992-4777; select the options for defect-reporting information from a touch-tone phone.
CONTACT:	See the inside front cover of <i>Using the Operating System</i> .
SUPPORT SERVICE:	OS/2 Support after the "Getting Started" period: OS/2 Support Line Single-User Services
SPONSOR:	IBM Software Solutions Management Center.
INTENDED FOR:	All OS/2 Users.
FORMAT:	Post-getting started, fee-based support service via voice support line; provides information on installation, setup, and usage; unlimited access: \$179 (U.S.), \$259 (Canada) per user, per year; price per call: \$45 (U.S.) or \$59 (Canada). The 900 number charges \$2.00 per minute with a maximum charge of \$50 and no charge for defects.
AVAILABILITY:	8:00 a.m. to 5:00 p.m. local time, seven days a week.
HOW TO ACCESS:	Call (800) 992-4777 or (900) 225-5522.
CONTACT:	(800) 992-4777. Ask for extension 5-0336.
SUPPORT SERVICE:	OS/2 Support after "Getting Started" period: IBM End User Support Help Desk
SPONSOR:	IBM End User Support.
INTENDED FOR:	OS/2 users in multi-system corporate installations.
FORMAT:	Post-warranty, fee-based support service via voice line; over 250 IBM and non-IBM software products supported, including OS/2 installation, setup, and usage.
Contract basis:	Charges are based on the number of workstations supported and the hours of coverage (24 hours or 7:00 a.m. to 7:00 p.m.).
Per call:	Use the 900 number; no contract is required and the charge is \$2.40 per minute with the first minute free.
AVAILABILITY:	8:00 a.m. to 5:00 p.m. local time, seven days a week.
HOW TO ACCESS:	Call (800) 825-8737 or (900) 988-0990.
CONTACT:	(800) 964-8523.
SUPPORT SERVICE:	OS/2 Support after "Getting Started" period: IBM Personal Systems Support Family
SPONSOR:	IBM Personal Systems.
INTENDED FOR:	Users of OS/2 PC-DOS and any IBM applications that run in the OS/2, DOS, or Windows environments.
FORMAT:	Several customizable support offerings that include per-incident, standard, and premium levels—a fee-based support via toll-free voice line. Additional services include: 24-hour access, priority handling, multi-vendor coordination, conference calls with experts, on-site house calls, IBMLink forums, application assistance, Technical Connection CD-ROM, and <i>PS Technical Solutions Magazine</i> .
AVAILABILITY:	8:00 a.m. to 5:00 p.m. local time, Monday to Friday (24-hour, 7-day-a-week options are available).
CONTACT:	Call (800) 799-7765 or (800) 992-4777.
SUPPORT SERVICE:	OS/2 Support on On-line Systems: TalkLink, CompuServe, Prodigy, Delphi, GEnie, America Online.
SPONSOR:	IBM Personal Software Products.
INTENDED FOR:	Anyone.
FORMAT:	Free, message-based technical support—you can review frequently-asked questions and answers; participate in conferences and forums with other users and IBM support personnel; submit problem reports; and receive assistance. IBM's TalkLink (which includes the OS/2 BBS) and CompuServe provide the highest level of support.
AVAILABILITY:	24 hours.
PREREQUISITES:	PC with a modem and communications software (see "Information Center," May 1994, pages 79 - 81). CompuServe and Prodigy have an OS/2 defect-reporting form in file <i>problm.txt</i> .
HOW TO ACCESS:	Access numbers and communications software are provided by each service.

Table 1: Where to Get OS/2 Support (cont'd)

CONTACT:	America Online (800) 827-6364 CompuServe (800) 524-3388 Delphi (800) 695-4005 GEnie (800) 638-9636 Prodigy (800) 776-3449 TalkLink (800) 547-1283										
SUPPORT SERVICE:	IBM Personal Computer Company Bulletin Board System										
SPONSOR:	IBM PC Company, Raleigh, NC.										
INTENDED FOR:	Anyone with a PC and a modem.										
FORMAT:	Bulletin-board system (BBS) with open enrollment and no charge (other than a toll call). The service is Menu-driven with an extensive library of text files (product information, questions and answers, etc.) and software (device drivers, Service Packs, patches, etc.).										
AVAILABILITY:	24 hours.										
PREREQUISITES:	300-9,600 baud modem and general communications software (such as the SoftTerm applet provided with OS/2).										
HOW TO ACCESS:	Modem call to (919) 517-0001.										
CONTACT:	BBS Status Line-(919) 517-0095.										
SUPPORT SERVICE:	OS/2 Quick Help										
SPONSOR:	IBM Personal Software Solution Center										
INTENDED FOR:	All OS/2 users who want solutions to the most common OS/2 problems—a good place to check before calling technical support.										
FORMAT:	Touch-tone phone selected topics; answers in voice recordings or fax.										
AVAILABILITY:	24 hours.										
HOW TO ACCESS:	Call (800) 992-4777. From a touch-tone phone, select "1" (for Software Problems), then "1" (for Quick Help Tips and Answers to the Most Frequently Asked Questions); the next menu is: <table><tr><td>1 - Installation</td><td>6 - Desktop and WorkPlace</td></tr><tr><td>2 - Disk and CD-ROM</td><td>Shell</td></tr><tr><td>3 - Windows and Win-OS/2</td><td>7 - Video</td></tr><tr><td>4 - DOS Emulation</td><td>8 - Mouse and Keyboard</td></tr><tr><td>5 - Printing</td><td>9 - COM Port</td></tr></table> After a selection is made from this menu, you must choose: 1 - Fax (to receive a fax at a number that you enter). 2 - Voice (a recording will be played over the phone).	1 - Installation	6 - Desktop and WorkPlace	2 - Disk and CD-ROM	Shell	3 - Windows and Win-OS/2	7 - Video	4 - DOS Emulation	8 - Mouse and Keyboard	5 - Printing	9 - COM Port
1 - Installation	6 - Desktop and WorkPlace										
2 - Disk and CD-ROM	Shell										
3 - Windows and Win-OS/2	7 - Video										
4 - DOS Emulation	8 - Mouse and Keyboard										
5 - Printing	9 - COM Port										

Four appendices can be found at the back of the book:

- **B:** a list of OS/2 error messages, explanations, and suggested actions to take.

- **G:** a place to jot down the details of your OS/2 installation, which is good information to have handy when discussing a problem.
- **H:** warranty information (90 days, not 60 as with OS/2) for

mini-applications and productivity aids.

- **I:** How to create memory dump disks (for serious problems!).

On-line help

Check your installation and device driver disks for Read Me files (often with names like *read.me* or *readme.txt*). The files may contain last-minute warnings or tips not found in the documentation. If you encounter an error message from OS/2, ask for help by pressing <F1> or by using the **help** command. For example, if you receive error message **sys0002**, entering "Help 0002" will display additional information.

Write It down

Document problems carefully by using the hard-copy or on-line forms provided. Describe your installation (CPU, memory, hard disk, OS/2 version, running applications, installed hardware, device drivers). Is the problem recreatable? Can you duplicate the conditions that cause the problem consistently? Do you remember any changes to your installation that occurred before the error condition first appeared? Which error messages are you getting? Print out your *config.sys* file and (if you are running DOS or Windows applications) your *autoexec.bat* file. Describe any workarounds you are using to circumvent the problem.

The problem may already be fixed

If possible, check the OS/2 forums and Q&A databases available on some bulletin-board systems (see "Information Center," April 1994, pp. 71-73) and Table 1, in this issue. The frequently-asked questions (FAQ) file identifies many common problems and solutions. Call the Quick Help system (Table 1), visit

Table 1: Where to Get OS/2 Support (cont'd)

SUPPORT SERVICE:	OS/2 Fax-Back Information
SPONSOR:	IBM Fax Information Service.
INTENDED FOR:	Anyone with a fax machine.
FORMAT:	Free fax-back service; you can request that a catalog be sent to your fax machine that lists documents you can call to order.
AVAILABILITY:	24 hours.
HOW TO ACCESS:	IBM Personal Software Solutions Center: (800) 992-4777. Select "1" (for Software Problems), then "2" (for Fax Library), or call IBM Fax Information Service (800) 426-4329. Touch-tone selections are as follows: "2" (to Order Document) or "3" (to List Documents); lists include "1" (Personal Systems), which includes several OS/2 documents, such as specification sheets on IBM OS/2 tools and profiles of OS/2 installations.
SUPPORT SERVICE:	OS/2 Fax-Back Information
SPONSOR:	IBM Personal Computer Company Automated Fax System.
INTENDED FOR:	Anyone with a fax machine.
FORMAT:	Free fax-back service; you can request a catalog to be sent to your fax machine and then call back to order individual fax documents. The three-page catalog includes over 100 technical tips on subjects such as Common Problems and Answers for OS/2, Creating an OS/2 Boot Disk, General <i>config.sys</i> Information, Hardware Support for OS/2 Extended Services, OS/2 2.1 Service Pack, Installing Device Drivers, and many more.
AVAILABILITY:	24 hours.
HOW TO ACCESS:	Call (800) 426-3395 from a touch-tone phone. Select "1" (customer), then "2" (to order catalog), then "4" (for operating systems).
SUPPORT SERVICE:	Technical Connection Personal Software
SPONSOR:	IBM Personal Software Products.
INTENDED FOR:	Anyone with a CD-ROM drive and OS/2.
FORMAT:	CD-ROM provides technical information, service and solutions for OS/2, DOS, and LAN systems; databases of information on closed problem reports, technical bulletins, Corrective Service disks, Reference and Diagnostic disks, device drivers, and product information and newsletters; AskPSP is an expert system tool that lets you interactively define your problem and narrow down the possible solutions.
AVAILABILITY:	This offering is available as a single copy or a yearly subscription. It is available quarterly (four editions) for \$119 (U.S.) and \$169 (Canadian) or monthly (12 editions) for \$299 (U.S.) and \$429 (Canadian).
PREREQUISITES:	OS/2 system with supported CD-ROM drive.
HOW TO ACCESS:	CD-ROM is provided with access software and menu selections.
CONTACT:	(800) 992-4777 from a touch-tone phone; select "3" (Other Services), then "3" (Technical Connection CD-ROM), then "3" (Technical Connection CD-ROM).

an on-line service like CompuServe or TalkLink (see "Information Center," May 1994, pp. 79-81) for more personalized assistance. If a Customer Service Disk (CSD) or Service Pack is available as an update to your release of OS/2, it may contain a fix to your problem.

If you have a fax machine, try the fax-back services listed in Table 1. If you have a CD-ROM drive and provide support for others, look into IBM's Technical Connection CD-ROM (see June 1994, pp. 74-76). The Ask PSP program provides an interactive way to narrow down the possible solutions to a problem.

Other support

If you are a software developer or provide help-desk support for your company, specialized support is available. You can call IBM's Developer Assistance Program (DAP) at (407) 982-6408 or fax (407) 443-3241. The Technical Coordinator program's number is (800) 547-1283, IBM's Application Assistance Center is (800) 547-1283, and Multimedia Software Support can be reached at (800) 241-1620. The Solution Validation Lab's number is (800) 742-2493.

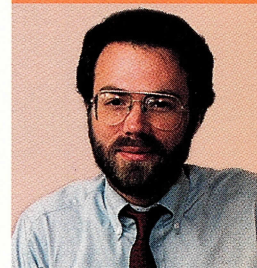
If you are developing and marketing OS/2 non-software products, such as books and courses, call IBM's Independent Vendor League at (203) 452-7704 or fax (203) 268-1075. Ask for a copy of their *Sources & Solutions* directory.

If you are looking for other IBM support or are trying to locate a specific IBM U.S. product expert, call IBM's General Information number (800) 426-3333.

Dick Conklin is editor-in-chief of OS/2 Developer, contributing editor to OS/2 Magazine and author of three OS/2 books. He can be reached at CompuServe 76711,1005 or Internet os2mag@vnet.ibm.com.

Config.sys Odds and Ends

MORE OS/2 HISTORY LESSONS, SYSTEM TWEAKS, AND IMPROVED CRASH PROTECTION BY MARK MINASI



In the past few issues, I've discussed various *config.sys* commands, working my way through a typical OS/2 *config.sys*. This month, We'll finish our discussion with a look at the "miscellaneous" commands. First, let's look at the shell-related commands:

```
PROTSHELL=D:\OS2\PMShell.EXE
SET OS2_SHELL=C:\OS2\CMD.EXE
```

In any operating system, the first application program is the user shell. If you run a process viewer on OS/2, you'll find that the process with ID number one is the user shell, which, in the case of OS/2, is the Workplace Shell. Under OS/2 1.1 through 1.3, the user shell was called Presentation Manager, hence the name **PMShell**. The programming interface commands, the Application Program Interface (API), that refer to graphical actions start off with the prefix **PM** or even **WIN**. The term Presentation Manager was actually an important one for both IBM and Microsoft in the late 1980s. Microsoft even went so far as to call Windows 2.0, "The Microsoft Windows Presentation Manager 2.0." And, for those of you collecting OS/2's veriform appendixes, many OS/2 API calls start off with the prefix **DOS**, as in **DOS_Open**, to open a file. The DOS reference is to 286DOS, one of the original internal names for OS/2 1.0.

You probably won't do anything with the **protshell** command, un-

**When you see
a text session with a
command prompt like
[C:\], you're looking
at *cmd.exe*.**

less you're deliberately replacing the Workplace Shell with your own new front-end. The only time I ever saw someone do so was when they were replacing the OS/2 2.x Workplace Shell user interface with the OS/2 1.x Presentation Manager user interface. It is possible to do that, although I've never tried it, and frankly can't imagine why anyone would want to replace the Workplace Shell with the Presentation Manager—WPS is miles better.

Cmd.exe is the name of the protected-mode version of *command.com*, a command-line user interface. When you see a text session with a command prompt like [C:\], you're looking at *cmd.exe*. The only reason you might want to change the **OS2_SHELL** line would be if you wanted command-line sessions to start off a particular batch file automatically. For example, if you are the OS/2 support person in an office where people are constantly opening the OS/2 command window and

closing it incorrectly, every time someone double-clicks on the title-bar icon, which is the right way to close most windows, they get a daunting "This session may contain an active program. Do you want to close the session without saving your data?" message. If they press <Enter>, the default button, which says "No," the session will remain on the desktop. It is, of course, better to close a session by typing **exit** at the command line. If you create a DOS session under Windows, they'll get a reminder message that automatically appears, telling them that they should use the **exit** command to close a command window. You can create a file called *hello.cmd* (put it in the OS/2 directory) that looks like this:

```
@echo off
echo To close this session and return to
the Workplace Shell,
echo type "exit" and press Enter.
```

Then, tell OS/2 to use this command file by altering the **set OS2_SHELL** command to look like this:

```
SET OS2_SHELL=C:\OS2\cmd.exe
C:\OS2\HELLO.CMD /K
```

The next item is **priority_disk_io**. Its legal values are either **yes** or **no**, and **yes** is the default. **priority_disk_io** is a command

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that falls in the "multitasking control" group of commands—commands that include **maxwait**, **timeslice**, **priority**, and **threads**.

Because disk accesses are quite slow when compared to other computer activities, they don't timeslice well, which means that when your program is looping through some calculation, it's pretty easy to suspend that program in mid-loop, give some CPU time to another program, and return to the looping program. With disk accesses, however, you can't just say, "okay program number one, even though you're in the middle of doing an important time-critical operation with your disk drive, we're suspending your CPU time for the moment so that we can give another program a chance to get some work done; we'll get back to you soon, I promise."

Disk operations that continue uninterrupted for long stretches of time are called critical sections.

OS/2 knows about these sections, so when it sees one coming up, it will tend to hold it off until it gets some other, more interruptible tasks finished. As a result, disk operations get even slower, because OS/2 waits before doing them. Foreground tasks can be slowed down noticeably by disk operations. **priority_disk_io** says to OS/2, "if the foreground's got to do disk I/O, then do it—don't wait." This action slows down background tasks that do disk I/O, so you'd set this option to **no** if you wanted to speed up some important task that uses the disks heavily in the background.

IOPL=YES is a common OS/2 *config.sys* command—virtually every machine I run across has this setting in place, which is a shame because it weakens OS/2's "crashproofing."

You can secure an operating system from crashes in two ways. First, don't allow programs to write into memory areas that don't belong to

them and second, don't allow programs to manipulate hardware directly. OS/2 accomplishes the second goal by allocating blocks of memory to programs on demand only and then using the 386 protected mode's hardware ability to track which sections of memory are owned by which programs. If program A tries to access the memory owned by program B, a general protection fault will probably occur (although it could be a "segment not present" fault in a less likely circumstance). Before program A can even begin to clobber program B, the CPU stops it dead. It's possible for A to clobber its own data, to be sure, but that would only crash program A, not the whole operating system.

A could crash the system another way. By tampering with some part of the hardware, it could reset the video board to an unusable state, requiring a system power on and off; or, it could reset the processor by sending

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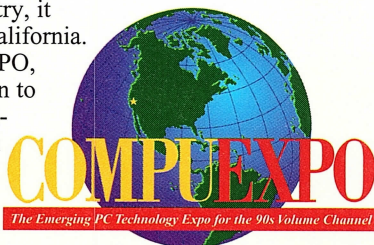
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a command to the keyboard controller telling it to use its unique power to force a processor reset. Either situation—and thousands more—would be unacceptable in an operating system that should be crashproof. In theory, it is impossible for those things to happen. Under OS/2, UNIX, NT, or any protected-mode operating system you can name, applications shouldn't talk to hardware—device drivers should talk to hardware. That means that if all of OS/2's device drivers run stable code, then crashes due to hardware/software interactions should be impossible.

Unfortunately, when OS/2 1.0 arrived, programmers didn't like the idea that they could no longer get to a PC's hardware. They'd become accustomed, under DOS, to being able to twiddle registers to their heart's content, so they told Microsoft, "don't fence us in!" Microsoft responded by offering

the **iopl** command.

IOPL, or Input/Output Privilege Level, controls whether or not applications can access hardware directly. If set to **yes** (the setting most people have) application programs get the same privilege level as device drivers. They can't affect the operating system itself, as the OS has a higher privilege level than device drivers, but giving device-driver-level privilege to every single application makes it much easier for a buggy program to crash the system. Obviously, if set to **no**, no program can directly address hardware.

I'm not sure why **yes** is the default. I prefer to use **no** as it seals up many of the leaks in OS/2's crashproofing. Doing so, however, has, over the years, presented some troubles with Hewlett-Packard LaserJet printer drivers, as they seem to require that you set **iopl=yes** or they won't work if the printer is directly attached to your computer. I print

through a networked printer without any trouble. So set **iopl=no** and see if anything won't run as a result. If you do find a program that insists on I/O privileges, then you needn't open the door for all programs to have those privileges, you can just name the programs that require the privilege level. For example, **iopl=proga,progb** if you've got two programs named **proga** and **progb** that must have I/O privileges.

Now you're equipped to go out and tweak that *config.sys* to your heart's content. Be sure to keep your Installation Disk around, however, just in case you render your system nonbooting with your experiments.

Mark Minasi has been a consultant and educator in the fields of advanced PC operating platforms and PC technology since 1984. He is a contributing editor for Compute, BYTE, and OS/2 Magazine. You can contact him at CompuServe 71571,264 or Internet

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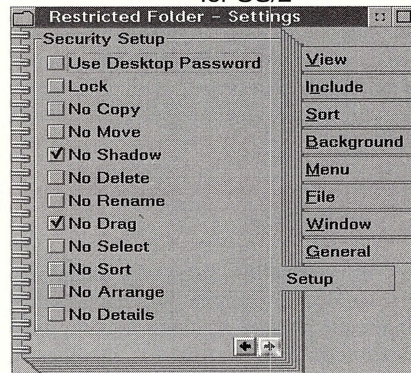
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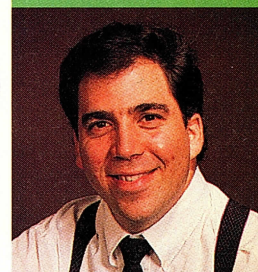
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Those Darned Extra desktops

SWAP-FILE MONITORING, MULTIPLE DESKTOPS, THREAD PRIORITY,
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DISPLAY FONTS

Q: I'm running OS/2 2.1 with the latest service code. Recently, I switched from the NEC 5FG monitor to the NEC 6FG to alleviate eye strain but, as a result, the fonts in some of the windows appear too large to fit into the window area. In some cases, I've been able to readjust the fonts so that they fit again but, in some instances (for example, some of the notebooks for objects), I haven't figured out how to solve the problem.

A: As you have noticed, not all of the fonts and colors in the Workplace Shell can be customized using the System Setup object. The notebook fonts, unfortunately, cannot be changed. You would be better off using the Selective Install object to reinstall your video support, asking for the NEC 6FG settings. Your *ini.rc* file will be rebuilt and your *os2.ini* file will subsequently be changed when you reboot, or you can choose to rebuild your *os2.ini* file manually.

MULTITASKING DOS

Q: How does OS/2 multitask DOS and Windows applications? Aren't they single-threaded?

OS/2 treats each VDM as a separate thread, even though DOS and Windows applications cannot be multithreaded.

A: Even though DOS and Windows applications are single-threaded, OS/2's multitasking capabilities allow them to run concurrently. You can view each DOS or Windows session as one program—the Virtual DOS Machine (VDM) code. Inside this VDM, a program runs.

A DOS program is one single-threaded program. Windows is the program under which a Windows application runs. Windows makes it appear as if several applications were running at once within the Windows VDM.

OS/2 multitasks at a minimum at the program level. OS/2 works with threads, which are each an instance of execution. OS/2 multitasks by intelligently and efficiently switching between these threads. Native OS/2 applications are capable of running multiple threads,

which enables the application to run pieces of itself concurrently.

OS/2 treats each VDM as a separate thread, even though DOS and Windows applications can't be multithreaded. OS/2 virtualizes the system services DOS and Windows programs need by treating each VDM as another thread, and using the V86 mode of the Intel 80386, 486, and Pentium processors, while protecting them (and itself) from errant programs. OS/2 multitasks DOS and Windows programs with each other, but they have no concurrent properties within themselves.

MULTIPLE DESKTOPS

Q: I noticed, when I looked in my Drives object, that I have multiple desktops, which might be a result of some <Alt-F1>s I had to do some time back. How do I get rid of the extra desktops?

A: Open the Drives object and look at the folder. You will see the extra desktops. One desktop will be highlighted, or cross-hatched, to show it is in use. You can delete the other desktops.

SCSI.SYS

Q: I bought a tape drive that connects to the SCSI port and

came with a file called **scsi.sys**. The installation program that came with the drive installed it into my **config.sys** file, but it does not appear to work. What should I do?

A: The file **scsi.sys** is an older SCSI driver that is still packaged with certain tape drives. The file you need comes with OS/2 and is called the SCSI DASD manager. The name of the file is **os2scsi.dmd**. You should remove the line in **config.sys** that references **scsi.sys**, and add the following line:

```
BASEDEV=OS2SCSI.DMD
```

Then, check to see that the file is in the **\os2** directory on the boot drive. If it is not, get the file from your OS/2 installation disks. The surest way, however, is to use the Selective Install object within the System Setup object to install SCSI device support. Then, choose the SCSI adapter card installed in your computer.

SWAPPER MONITORING

Q: Is there an easy way to log the size of the swap file for a specific time period so I can determine the optimal initial size of my swap file later?

A: The small REXX program in Listing 1 can log the size of the swap file for later analysis. You can run this program from a command line as long as the REXX feature has been installed with the operating system. The program will log the size of the swap file to a file called **swapmon.dat**.

You can invoke it when you want to start monitoring the swap file size by executing it by name at a command prompt. You can go to that command prompt and use <Ctrl-Break> or <Ctrl-C> to stop

the monitoring. By using a text editor, such as the System Editor, you can examine changes in the swap file that occurred while the program was running.

This program may appear to be a resource hog causing contention for the disk and the CPU. But, in most instances, the CPU is not fully utilized, so spare cycles are available. And, the program only writes to the disk when a swap-file observation is a different size than the previous observation, so it does not add a significant load to the system. In addition, the directory information that the program accesses to observe the swap is used so often that it probably just remains in the file system cache.

The lines in the program that log the size to a file could be rewritten to write the size to the screen. And you could just run the program in a window where you can always see it. There are many pos-

sibilities—you can tailor how the data gets displayed.

The location of the swap file is hard-coded in the program. If you are not booting OS/2 from the **c:** drive, or you have your swap file in a different location, you will need to change that code.

Just type in the file as shown in Listing 1, and name it **swapmon.cmd**.

WIN-OS/2 SWAPPING

Q: Does OS/2 for Windows use the swap file that Windows previously created when running a Windows application, or does the Windows application only have access to the OS/2 swap file as virtual memory? I could really use the extra disk space if it is not being used.

A: Actually, Windows applications do not access swap files under OS/2 at all. OS/2 manages

Listing 1: Monitoring your swap file

```
/* swapmon.cmd - simple REXX utility */
/* to log swapfile size changes */

call RxFuncAdd 'SysSleep','RexxUtil','SysSleep'

/* default, change if necessary */
SwapFileName = 'c:\os2\system\swapper.dat'
LogFile = 'c:\os2\swapmon.dat' /* or whatever you want */
SwapFileSize = stream(SwapFileName,'c','query size')
call Lineout LogFile,SwapFileSize /* log initial size */

do forever
    TempSize = stream(SwapFileName,'c','query size')
    if TempSize \= SwapFileSize then do
        /* it's grown or shrunk */
        SwapFileSize = TempSize /* store new size */
        call Lineout LogFile, SwapFileSize
    end
    call SysSleep 1
end

/* end */
```


memory for anything running in the system.

When an OS/2 application needs memory, it requests it from the system. If no physical memory is free, the OS/2 memory-management subsystem writes some pages of memory to the disk, freeing up pages to satisfy the memory request. When the pages that were moved to the disk (swapped out) are needed, they are paged back in, using the same algorithms and freeing up other pages. This memory over-commitment is called swapping.

Microsoft Windows has its own mechanisms for swapping under DOS, but it still allows you to over-commit memory under DOS and Windows. So, how does OS/2 implement swapping for Windows applications under OS/2?

Since every memory request made by a Windows application goes to Windows to be satisfied (or swaps something out to be satisfied), the Win-OS/2 development team wrote the memory-management functions to make calls to the OS/2 memory-management subsystem for Win-OS/2. In reality, all memory-management requests from Windows applications running under OS/2 go through the OS/2 memory-management routines, bypassing any swapping that real Windows would do. As I stated earlier, VDMs are conceptually just another OS/2 process—including the memory-management requests. Applications in VDMs run just as they would under DOS, but the VDM memory manager asks the OS/2 memory manager for the memory as opposed to DOS just having the memory for them. So, under OS/2, it is safe to delete the swap file created by a previous session of DOS or Windows.

When you boot to real DOS and Windows, Windows will swap just as it did before, because

you are no longer running under OS/2.

THREAD PRIORITY

Q: In an earlier version of OS/2, I noticed a line that began with **PRIORITY=** in my *config.sys* file. When I installed OS/2 2.1, that line was no longer there. Why? What did that line do? What was removed?

A: Previous releases of OS/2 contained a **PRIORITY=** line in the *config.sys* file. The acceptable values were **DYNAMIC** or **ABSOLUTE**. The default was **DYNAMIC**. The OS/2 scheduler/dispatcher would dynamically modify threads' priorities based on items, such as whether the thread had just returned from doing an I/O operation, belonged to a foreground process, had been starved from the processor for a period, or other factors.

ABSOLUTE indicated that no thread's priority would be changed by OS/2. Programs (to be exact, threads) have the ability to change their priorities. If **ABSOLUTE** was specified on the **PRIORITY=** line, it would be up to each and every process to change their threads' priorities. This feature was designed for special-purpose applications that OS/2 might be used for, such as dedicated medical device recording or special-purpose applications, as opposed to the typical desktop configuration.

It became evident that many users who were not aware of the ramifications were setting **PRIORITY=ABSOLUTE**, thinking they would improve performance. In the vast majority of cases, exactly the opposite was true. So, instead of leaving in the line that gives people the opportunity to hurt their systems, it was removed, but the function remains.

So, the operating system default is **PRIORITY=DYNAMIC** if no line in *config.sys* says otherwise. The option to specify **PRIORITY=ABSOLUTE** is still available for special-purpose applications—it just is not as visible.

LAPTOP LAN

Q: In the May issue of *OS/2 Magazine* (pp. 82-83), you discussed LAN drivers on laptop machines. How can I avoid acknowledging the LAN errors without having different *config.sys* files?

A: Depending on the type of hardware you have, you can use one or more of the following options in your *config.sys* file. But be aware, these options cause errors to be suppressed or ignored and can mask true errors when you plug back into your LAN connection back at the office. On the *config.sys* line that reads:

```
DEVICE=C:\IBMC\LANMSGDD.OS2
/I:C:\IBMC\
```

add a /P at the end to make it read:

```
DEVICE=C:\IBMC\LANMSGDD.OS2
/I:C:\IBMC\ /P
```

(Note: this would appear all as one line.) You can also add a line to *config.sys* to read:

```
PAUSEONERROR=NO
```

to prevent the system from stopping for every error it encounters.

STB HORIZON VIDEO

Q: I have an STB Horizon card that I am trying to install. OS/2 tells me that it is a VGA card—not

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an SVGA card. The DSPINSTL program will not let me override the option to SVGA. How can I get this card installed at SVGA resolution?

A: The STB Horizon card uses the Cirrus-Logic GD-5426 driver. When you go through the installation for OS/2 2.1 or OS/2 for Windows, it will only show a VGA card—not SVGA. This problem also occurs with other GD-5426-based cards. You can take the S3 driver disk from IBM and run the installation that updates the display list to include S3. A subsequent invocation of the DSPINSTL program will identify the STB Horizon (and others) as SVGA and load the Cirrus-Logic SVGA support for all additional resolutions and/or colors supported.

FOLDERS AND MENUS

Q: I know how to add program objects to the desktop menu, but how can I (if I can) add folders to the desktop menu? I'd like to have the Templates folder open from the desktop menu like the System Setup folder does.

A: Unfortunately, the OS/2 Workplace Shell is structured so that programs can be launched from a pop-up menu, but no interface exists to open other Workplace objects, such as folders, with a pop-up menu. You can only add program objects to a pop-up menu to open at this time.

David Reich, a contributing editor to OS/2 Magazine and author of *Designing OS/2 Applications*, has been with the OS/2 development team since 1987. David is interested in your questions and suggestions. Contact him at CompuServe 76711,632 or Internet speedracer@vnet.ibm.com.

End Notes cont'd from p. 80

dows (CD-ROM and disk versions), not to mention some sneak previews of future OS/2 blessings. QUE has always been prompt-to-market. *Using OS/2 2.0* (April, 1992), for example, hit the stores the same day OS/2 2.0 did, many months before any rival documentation appeared (including IBM's). QUE's secret is parallel (some call it corralled) processing. They employ one principal author (*BYTE* columnist Barry Nance, in this case) who enlists specialist writers for particular domains. A guru (John Little, author of *Maximizing OS/2*) performs a final technical edit and, together with the copy editors, ensures a uniform style across the multi-authorship. One factor, not unique to QUE, is that the authors maintain close contact with IBM's OS/2 development team to ensure up-to-date technical accuracy.

The book is explicitly targeted at intermediate and advanced users, however, the book's tutorial threads have a patiently accelerating pace that should not overtax a raw beginner. *Using OS/2 2.1* efficiently meets the how-to and reference needs of most OS/2 users with careful layout and typography. The "Contents at a Glance" section lets you plan your own OS/2 odyssey, and most pages have helpful "scan items" (marginalia pointing to related topics; a sort of manual hypertext). After a 20-page, uncondescending overview of OS/2 and its role in PC productivity, the authors allow the reader a "skip Chapter 2 if you know DOS" option. Not being sure if I (or anyone) truly knew DOS, I elected to read Chapter 2 and was suitably rewarded: on the 83-key keyboard, **pause** is assigned to <Ctrl-Scroll-Lock>—I don't recall ever knowing that!

Chapter 3, "Learning OS/2 If You Know DOS," explains DOS sessions, DOS compatibility (and lack thereof), LIM, XMS, and beating

the 640K barrier (as well as it can be explained). I was stuck at a reference to "16M of SMC memory," unable to find an earlier definition of SMC and scouring the index in vain. Is it a typo for XMS? The indexing (a thorn in all computer-book publishers' flesh), is not comprehensive enough for this wide-ranging book, which is intended as an occasional reference. Greater redundancy is needed to quickly locate such collocations as "main group menu" and "DOS full screen." I could not find "Mouse button" under either keyword. My advice to QUE, as a formerly mis-indexed author-victim, is to call Ted Laux, The Indexing King.

Chapters 4 through 8 deal with the far-from-trivial challenges called "Installing and Configuring." The authors certainly explain the steps more simply and cogently than the corresponding IBM manuals, but reading and digesting all the options through the eyes and guts of a potential unskilled user did give me pause. There seems to be no end to the choices and dangers. As the book says in the OS/2 for Windows section, "Many—if not most—desktop computers come with DOS and Windows pre-loaded...some manufacturers are beginning to pre-load OS/2 on their computers, if you ask for OS/2 instead of DOS and Windows. This is a new trend." We must encourage this trend!

Chapters 9 through 18 gracefully expound the OS/2 GUI, the Workplace Shell, common commands, the help system, text-editing, printing, and simple batch-file processing. Chapters 19 through 26 ("Advancing Your OS/2 Skills") explore the heavier stuff: REXX, the standard utilities and applets, comms and database tools, and networking with NetWare and other LANs. The following 100 pages provide a detailed, alphabetically-sequenced command reference. The book includes eight appendices, including "OS/2

Games," "Enjoying MMPM/2" (quite sketchy), and resources for further information (hundreds of BBSs and Internet *ftp* sources).

Incidentally, Prentice-Hall Computer Publishing, QUE's parent publisher, maintains several useful CompuServe Forums. The PHCP forum (GO PHCP) lets you contact and quiz the authors directly. The QUESOFT forum (GO QUESOFT) provides technical help and updates for the growing number of QUE books that include software on disks.

In the hotly contested OS/2 computer book market, with titles proliferating and prices inflating, QUE's single, comprehensive, up-to-date volume offers excellent value for every level.

You may well ask why anyone would need an external OS/2 guide at all, considering the voluminous wherewithal supplied by IBM. A sad but true fact is that some users do not have the IBM documentation but are enjoying OS/2 in the piracy of their own sites. This column urges such thieves to repent and pay their dues before it's too late.

RESOURCES:

Using OS/2 2.1 Special Edition (\$34.99)

By Barry Nance, Greg Chicares, Caroline M. Halliday, and Sue Plumley; 3rd Edition, 1994, QUE Corp.

READER SERVICE NO. 184

CPU (Computer Publishing Update) (\$30/year)

Published by Charles Ackerman.

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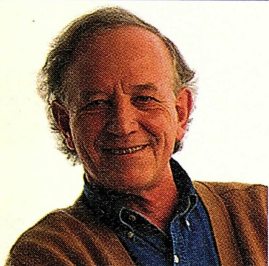
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Stan Kelly Bootle started computing on EDSAC I at Cambridge over 40 years ago. His Devil's Advocate column in UNIX Review has been running since 1984. He can be reached on CompuServe (70323,1560) or Internet (skg@crl.com).



Books for the Baffled

A LOOK AT USING OS/2 2.1 SPECIAL EDITION BY STAN KELLY-BOOTLE

QUE Corp. describes their latest publication, *Using OS/2* (the third edition covering OS/2 2.1 and OS/2 for Windows) as "the one, all-encompassing" user guide to OS/2. If you've read an earlier edition of this book, you'll probably rush to buy this timely update without my prompting. However, If you haven't, read on patiently.

An old Zen proverb says: "Beware of the man carrying one book," which I've always assumed was a warning against those who promote one true unique path to enlightenment. In the case of computer books, it is indeed legitimate to have doubts as to whether a single volume can meet the challenge. Such a "bible" would have to quench both the tutorial, referential, and reverential thirsts of a diverse readership, typically but improbably partitioned as beginner, intermediate, and advanced. And now we must add the astonishingly successful, zero-knowledge "Dummy" category, spawning endless "Books for the Baffled" titles and parodies: *LISP for the Listless*, *dBASE for the Debased*, *REXX for Deposed Monarchs*, *Visual BASIC for the Blind*, and so on.

The top three bestsellers reported in the *Computer Publishing Update (CPU) Index* are from IDG Books sporting the "x for Dummies" (I use the lower-case x to avoid confusion with books such as

The Joy of X —An Overview of the X Window System, by Niall Mansfield [Addison-Wesley]) template as pioneered by Dan Gookin's *DOS for Dummies* (IDG). Incredibly, 15 IDG "Dummies" titles appear in the CPU top 50, and even *UNIX for Dummies* has wormed its way into the top 100, at number 89! Alas, no OS/2-related books show up in the top 100, not even Rathbone's *OS/2 for Dummies*.

It may be depressing to find such low-self-esteem books outselling the "Thinking Person's Guide to x" series from Wiley:QED, but clearly, the free market force is with us. Beginners, especially the many computer-phobic beginners forced to take the plunge, are demanding gentle, "take-my-hand-I'm-a-stranger-in-purgatory" texts that match our mollycoddling GUIs. (Time will tell whether the "I Hate x" format from QUE will attract the hostile dummies.) The initial "Dummies" titles only claimed to lead the beginner over the first few back-breaking hurdles, with no pretense to being comprehensive. However, we are now seeing specialized offshoots, such as *More x for Dummies* and *x for Dummies Quick Reference*. There's no doubt this could lead to *Advanced x for Dummies* or *x for Advanced Dummies*. The obvious danger is that, regardless of content, the magic marketing power of "dummies" will be exploited in inappropriate titles. Moral: Ignore

the title, cover graphics, and blurb, and browse the contents and index.

What should we make of QUE's claim that *Using OS/2 2.1* is the "one all-encompassing up-to-date" bible for our favorite operating system? Well, QUE's venerable "Using x" titular template has chalked up many successes (the WordPerfect series in particular), so I approached their latest, third edition OS/2 offering with great expectations. Let me say at once that, in spite of some minor quibbles, if you are limited, shelf or dollar wise, to one general-user OS/2 book, forget the Zen warning: this book is the sensible choice regardless of your level of expertise.

The book really offers three volumes in one. Over 1,000 pages include a thorough tutorial (including REXX programming, database tools, and networking), a complete command reference, and (dispersed throughout) an engaging account of the OS/2 philosophy and *raison d'être*. The authors' obvious enthusiasm is a plus since many readers will be potential OS/2 users weighing the pros and cons before making a commitment, in particular, people who are attracted by the low cost of OS/2 for Windows (not much more than the price of a good book on the subject!).

Using OS/2 2.1 covers the latest releases, including OS/2 for Win-

End Notes cont'd on p. 78

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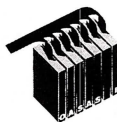
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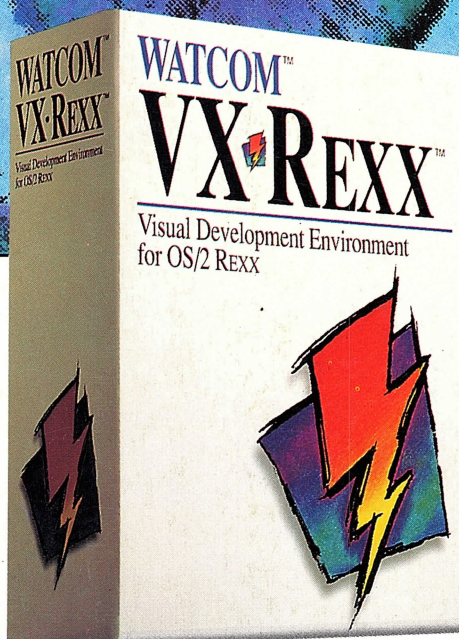
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